



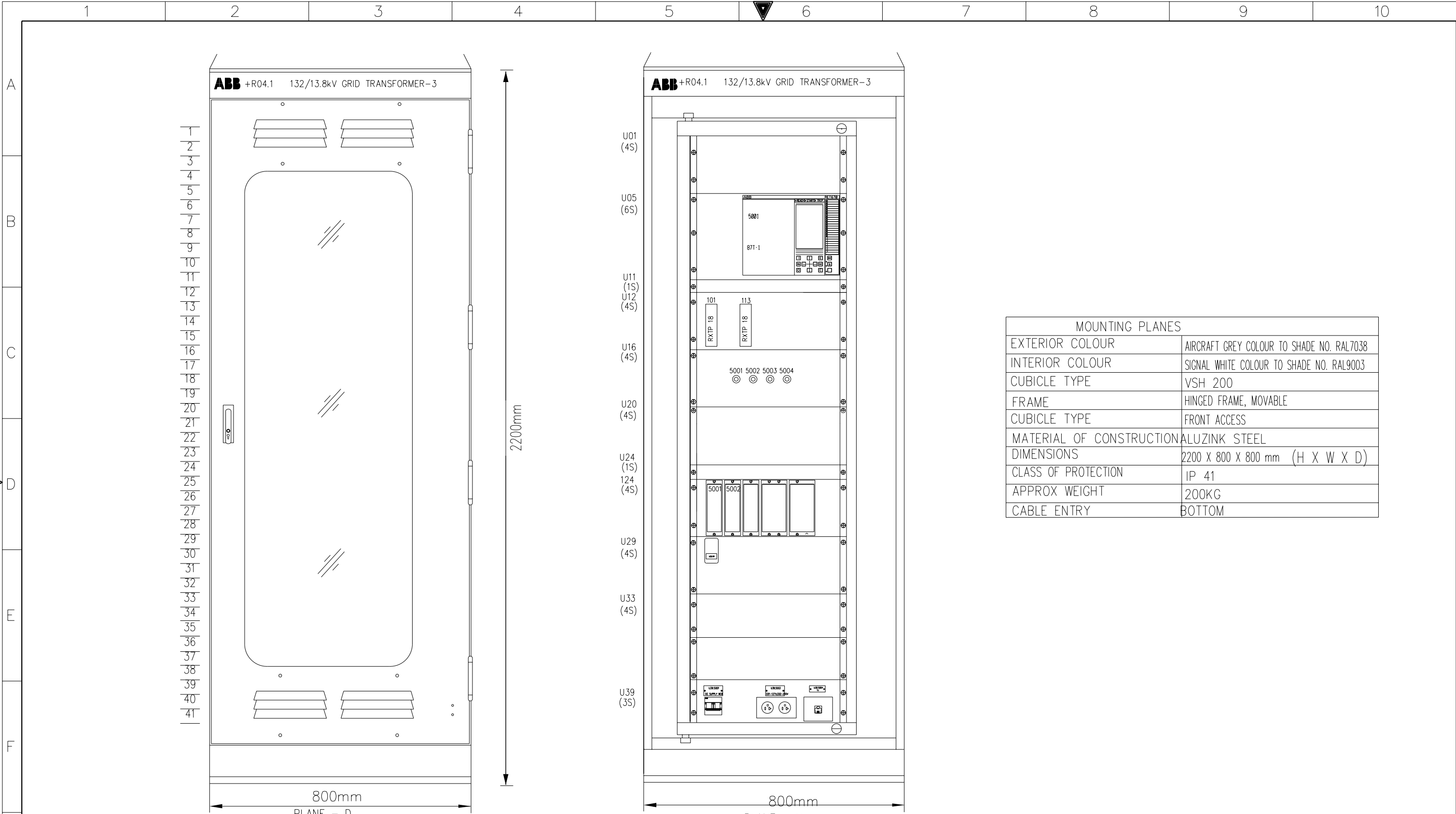


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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																																															
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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

ASSEMBLY DRAWING					
132/13.8kV GT-3 RELAY PANEL-1 +R04.1					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

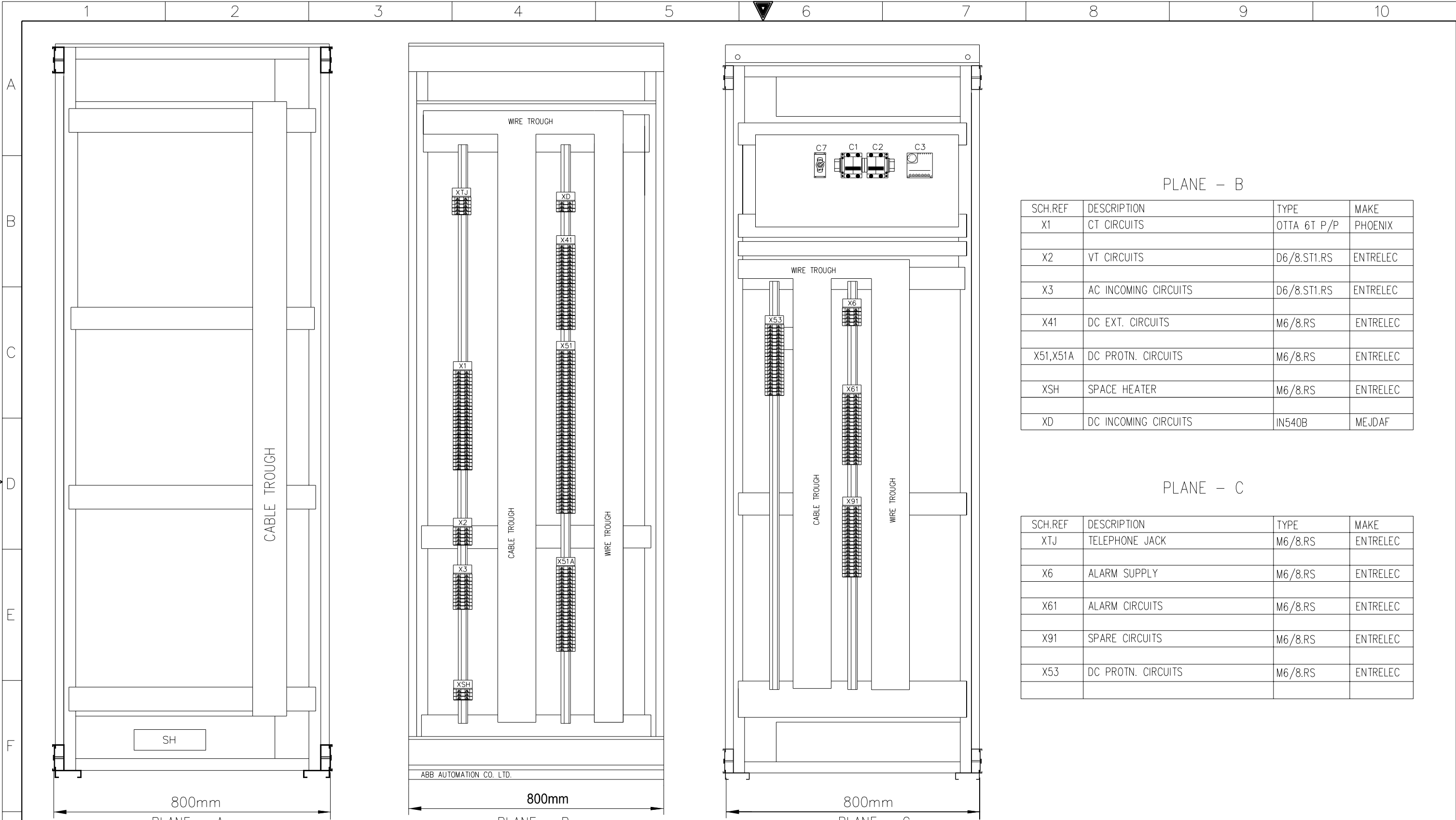
الشركة الوطنية لنقل الكهرباء



نقل الكهرباء

National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
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			G01	G02	



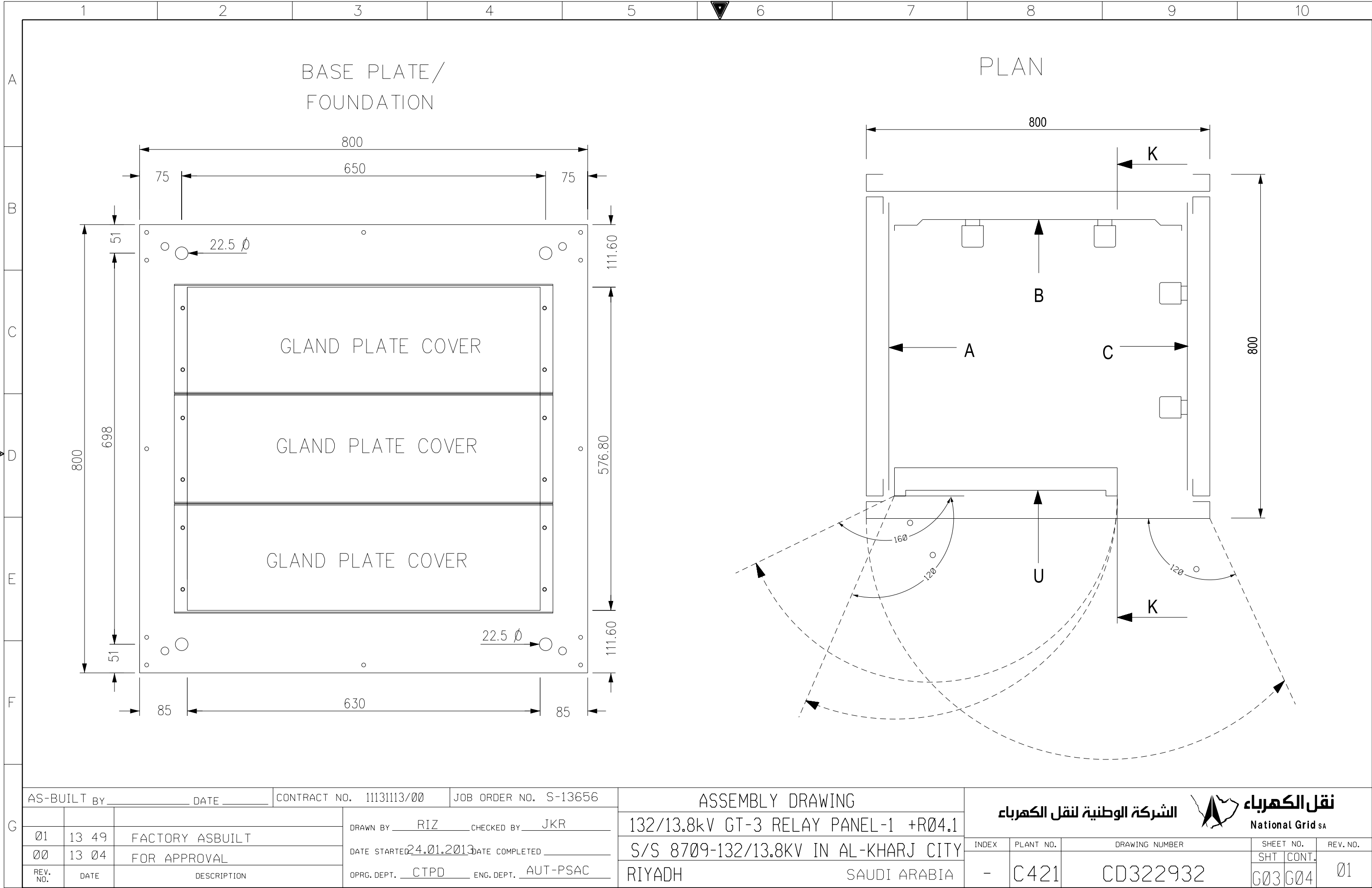
PLANE - B

SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X41	DC EXT. CIRCUITS	M6/8.RS	ENTRELEC
X51,X51A	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC
XD	DC INCOMING CIRCUITS	IN540B	MEJDAF

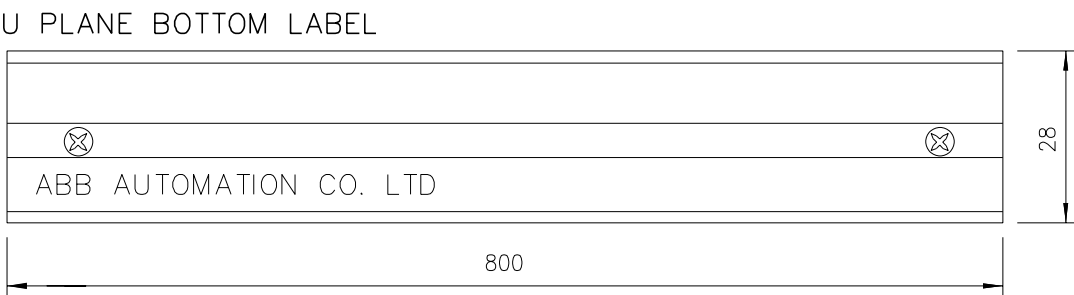
PLANE - C

SCH.REF	DESCRIPTION	TYPE	MAKE
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.RS	ENTRELEC
X91	SPARE CIRCUITS	M6/8.RS	ENTRELEC
X53	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC


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	REV. NO.	DATE	DESCRIPTION												







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MANUFACTURING LABEL	
<b>ABB</b> ABB Automation Co.Ltd.	
PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE:	2013
PANEL NO. :	+R04.1
DRAWING NO. :	S13656-CD-323934
MADE IN THE KINGDOM OF SAUDI ARABIA	

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B	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
				RELAY CUBICLE- +R04.1 ACCOMODATING THE FOLLOWING						
	1	U05.5001	87T-1	NUMERICAL TRANSFORMER PROTECTION IED WITH FOLLOWING DETAILS		301	1	RET 670*1	ABB	1MRK 004 816-DC
				FUNCTIONS			1			1MRK 004 005-DC
				-CONFIGURATION ALTERNATIVE						
				DOUBLE BREAKER, 3WINDING (B40) BASIC						
				-CONTROL						
				HARDWARE						
				-ANALOG SYSTEM						
				TRANSFORMER INPUT MODULE,RING LUG TERMINALS 91+3U,1A						
				110/220/V,50/60HZ/(TRM)(BASIC SELECTED ALTERNATIVE)LOCATION/P40/						
				TRANSFORMER INPUT MODULE,RING LUG TERMINALS 91+3U,1A						
				110/220/V,50/60HZ/(TRM)(BASIC SELECTED ALTERNATIVE)LOCATION/P41/						
				-CASING						
				POWER SUPPLY MODULE 90-250 VDC (PSM)						
				LOCATION P1/						
				NUMERIC PROCESSING MODULE 600MHZ, 256MB (NUM) BASIC						
				LOCATION/P30/						
				3/4\ SX 19" RACK CASING MAX 5 I/O MOD,						
				2TRM (RACK)						
				COMBINED BACKPLANE MODULE MAX 5 I/O MOD.						
				(BASIC SELECTED ALTERNATIVE) 2TRM (RACK)						
				UNIVERSAL BACKPLANE MODULE 2 ADM,2TRM (UBM) BASIC						
				-CONNECTION TYPE						
				STANDARD COMPRESSION CONNECTION TERMINALS )						
				LOCATION/P1-P16						
				-HUMAN MACHINE INTERFACE						
				MEDIUM GRAPHIC HMI,15 CONTROLLABLE OBJECTS						
				3/4 X 19"IEC (MHMI)						
			-IN/OUT MODULES							
			BINARY INPUT MODULE LOCATION P3,P5			2			1MRK 000 508-BB	
			BINARY OUTPUT MODULE,24 OUTPUT RELAYS (BOM)			2			1MRK 000 614-AB	
			LOCATION P4							
			OPTICAL ETHERNET MODULE 2 GLASS INTERFACE IEC61850-8-1/IEC61850-9-2						1MRK 002 266-AA	
			(OEM)( SELECTED OPTION) LOCATION P31:1							

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SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
13			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	216	3	S282 UC K6 S2-H02	ABB	GHS S282 064 R0317 GH S270 1916 R0003
	U39.5001	Q1	R1€ SUPPLY					
	U39.5002	Q2	RS€ SUPPLY					
	U36.5001	Q3	TC1€ SUPPLY					
14	U39.5003	C01 C02	CONVENIENCE OUTLET 10A, 127V AC CONVENIENCE OUTLET 10A, 220V AC	211	2	USM45&USMS45	LEGRAND	74140 & 74180
15		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS	211	2	S202P-K10 S2C-H11L	ABB	2CDS 252 001 R0427 GH 270 1917 R001
16		C3	THERMOSTAT FOR SPACE HEATER, 5-60°C	211	1	SK 3110	RITTAL	SK 3110
17	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE	211	1	EDF410	EDISON	EDF410
18		C7	ON/OFF SWITCH FOR SPACE HEATER	211	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101
19		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	211	1	LS30P	ABB	1SBV 010 213 R1202
20		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY	211	1	T4	SUNON	SP-20W
21		SH	SPACE HEATER, 150W, 120V, 60Hz	211	1	RICA	GRUPPO	1FZEK006C001

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B	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	22		X1	BLOT CONNECTING TERMINAL BLOCKS DISCONNECTIBLE FOR CT CIRCUITS		304	60	OTTA 6T P/P	PHOENIX	0790462
			X2	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR VT CIRCUITS		304	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
C			X3	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		304	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X41	SPRING LOADED TERMINAL BLOCK FOR DC EXT. CIRCUITS		304	40	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X51	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	97	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
D			X6	SPRING LOADED TERMINAL BLOCK FOR STN COM		304	10	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X61	KNIFE TYPE TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		304	20	M6/8.SNB	ENTRELEC	1SNA 115 688 R2500
			XTJ	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR TELEPHONE JACK		305	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
E			XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER		305	3	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			XD	TERMINAL BLOCKS WITH BLOCKING DIODE, Vrrm=1kV, If=3A AND SURGE TRAP, ENERGY ABSORPTION RATING 8J (10/1000mS)		236,276	3	N4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270
			X9	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR SPARE CONTACTS		295	20	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
F			X51A	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	15	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X53	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		304	32	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
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							- C421 CD322932		SHT CONT. 01	
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NG/D2-D (2012/01)

DMS

VECTOR





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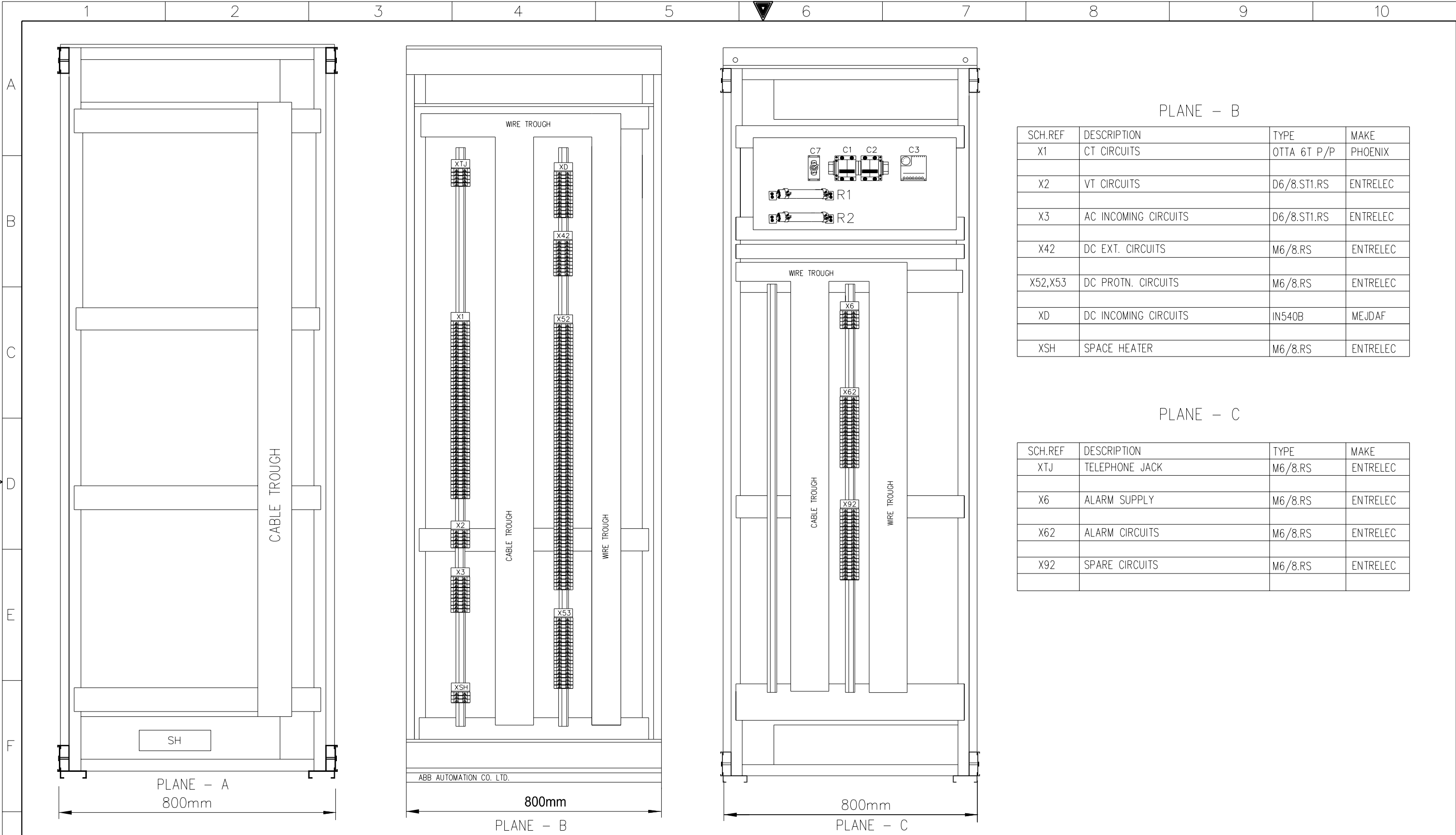
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	REV. NO.	DATE	DESCRIPTION																																																																							

LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
C1	C1 127V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C2	C2 220V AC SUPPLY MCB	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C3	C3 THERMOSTAT	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
C7	C7 ON/OFF SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
DS	DS DOOR SWITCH	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
IL	IL ILLUMINATION LAMP	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
SH	SH SPACE HEATER	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm

132/13.8KV IN AL-KHARJ CITY			SAUDI ARABIA		
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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																																																																														
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C	CONTRACTOR : ABB Contracting Company																																																																																																																					
	CLIENT : National Gridsa																																																																																																																					
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																																																																					
	SUBSTATION : S/S 8709																																																																																																																					
E	CONTRACT NO. : 11131113/00																																																																																																																					
	TITLE : Assembly Drawing +R04.2 [GT-3]																																																																																																																					
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PLANE – B

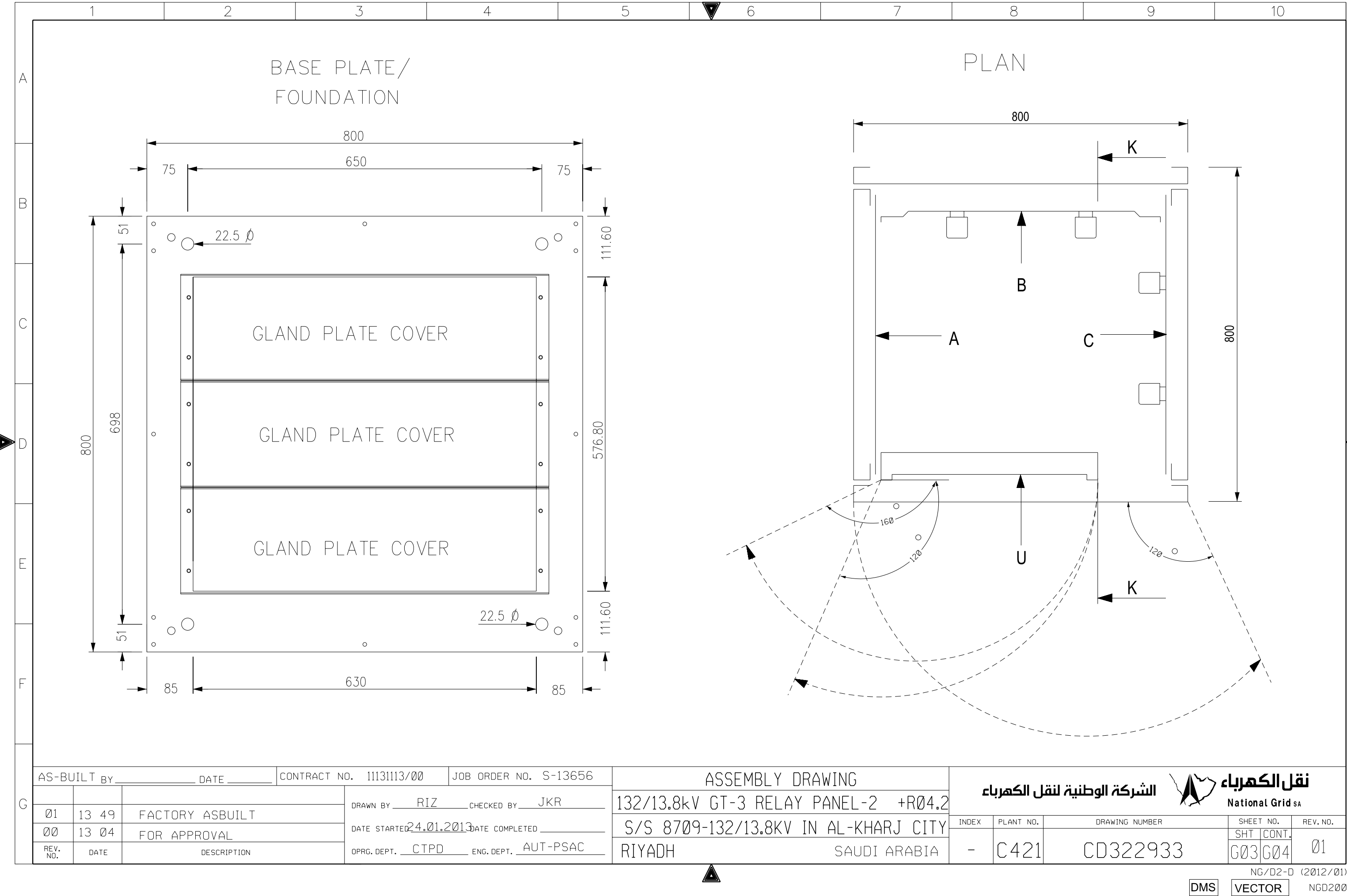
SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/P	PHOENIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC INCOMING CIRCUITS	D6/8.ST1.RS	ENTRELEC
X42	DC EXT. CIRCUITS	M6/8.RS	ENTRELEC
X52,X53	DC PROTN. CIRCUITS	M6/8.RS	ENTRELEC
XD	DC INCOMING CIRCUITS	IN540B	MEJDAF
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLANE – C

SCH.REF	DESCRIPTION	TYPE	MAKE
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X62	ALARM CIRCUITS	M6/8.RS	ENTRELEC
X92	SPARE CIRCUITS	M6/8.RS	ENTRELEC

G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div>الشركة الوطنية لنقل الكهرباء</div> <div> <b>نقل الكهرباء</b> National Grid sa</div>					
				DRAWN BY <u>      RIZ      </u> CHECKED BY <u>      JKR      </u>		132/13.8kV GT-3 RELAY PANEL-2 +R04.2		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT	CONT.	
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>      CTPD      </u> ENG. DEPT. <u>      AUT-PSAC      </u>		RIYADH SAUDI ARABIA		-	C421	CD322933		G02	G03
	REV. NO.	DATE	DESCRIPTION											





AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

ASSEMBLY DRAWING

132/13.8kV GT-3 RELAY PANEL-2 +R04.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD322933	G03G04	01

NG/D2-D (2012/01)

DMS VECTOR NGD200

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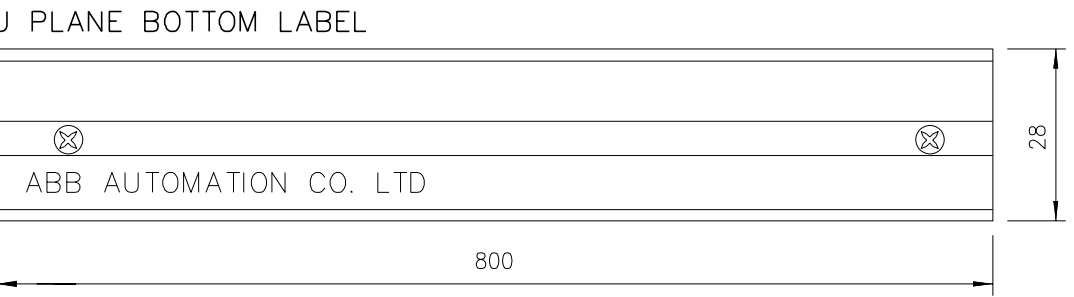
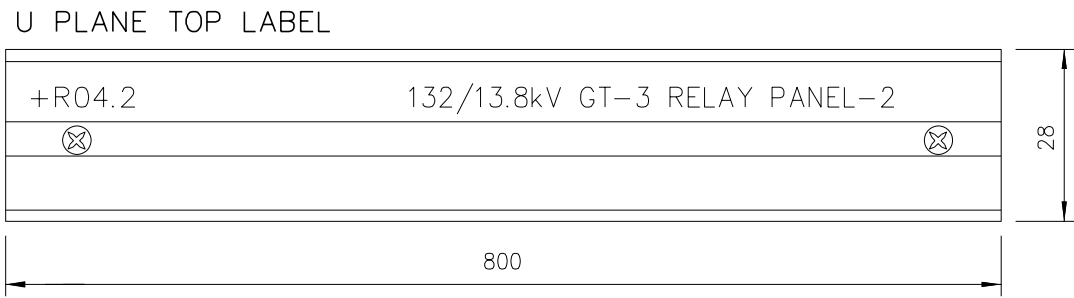
E

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TOP VIEW FOR EARTHING BAR



MANUFACTURING LABEL

**ABB** ABB Automation Co.Ltd.

PROJECT : National Grid SA  
S/S 8709


ORDER REFERENCE : 2875 RF S13656





YEAR OF MANUFACTURE: 2013

PANEL NO. : +R04.2

DRAWING NO. : S13656-CD-323934

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING			<div>الشركة الوطنية لنقل الكهرباء</div> <div> <b>نقل الكهرباء</b> National Grid sa</div>					
01	13 49	FACTORY ASBUILT	DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>			132/13.8kV GT-3 RELAY PANEL-2 +R04.2			INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY			-	C421	CD322933		SHT	CONT.	01
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			RIYADH SAUDI ARABIA							G04	L00	

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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																									
B																																																																	
C	CONTRACTOR : ABB Contracting Company																																																																
	CLIENT : National Gridsa																																																																
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																
	SUBSTATION : S/S 8709																																																																
E	CONTRACT NO. : 11131113/00																																																																
	TITLE : LIST OF APPARATUS +R04.2 [GT-3]																																																																
F																																																																	
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="2">LIST OF APPARATUS</td><td colspan="2"><div>الشركة الوطنية لنقل الكهرباء</div><div> نقل الكهرباء National Grid sa</div></td></tr><tr><td></td><td></td><td></td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY JKR</td><td colspan="2">132/13.8kV GT-3 RELAY PANEL-2 +R04.2</td><td colspan="2"></td></tr><tr><td></td><td>01</td><td>13 49</td><td colspan="2">FACTORY ASBUILT</td><td colspan="2">DATE STARTED 24.01.2013</td><td colspan="2">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td colspan="2">INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.</td></tr><tr><td></td><td>00</td><td>13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="2">DATE COMPLETED _____</td><td colspan="2">RIYADH SAUDI ARABIA</td><td colspan="2">- C421 CD322933 L00L01 01</td></tr><tr><td></td><td>REV. NO.</td><td>DATE</td><td colspan="2">DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="2"></td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>					DRAWN BY RIZ		CHECKED BY JKR		132/13.8kV GT-3 RELAY PANEL-2 +R04.2					01	13 49	FACTORY ASBUILT		DATE STARTED 24.01.2013		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			00	13 04	FOR APPROVAL		DATE COMPLETED _____		RIYADH SAUDI ARABIA		- C421 CD322933 L00L01 01			REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC			
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>																																																								
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NG/D2-D (2012/01)  
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B				RELAY CUBICLE- +R04.2 ACCOMODATING THE FOLLOWING						
	1	U05.5001	87T-2	NUMERICAL BIASED DIFFERENTIAL PROTECTION RELAY	501	1	P643	ALSTOM	P643 32 ND 6M0 040K	
				WITH THE FOLLOWING FEATURES	502					
				RATED CURRENT : 1A OR 5A						
				RATED FREQUENCY : 60 HZ						
				AUXILIARY VOLTAGE : 110 - 125V DC						
				BINARY INPUTS : 32						
				OUTPUT RELAYS : 16						
C				COMMUNICATION PROTOCOL : IEC61850						
	2	U12.5001	TS-1	TEST SWITCH FOR P633 RELAY (87T-2)	431	1	MMLG02	ALSTOM	MMLG02 R1AA 0001E	
	3	U12.5002	TS-2	TEST SWITCH FOR P633 RELAY (87T-2)	431	1	MMLG02	ALSTOM	MMLG02 R1AA 0001E	
	4	U12.5003	TS-3	TEST SWITCH FOR TRANS.MECH.PROTN	436	1	MMLG02	ALSTOM	MMLG02 R1AA 0001E	
	5	U16.5001	S86T2	PUSH BUTTON BLACK COLOUR, WITH 1NO+1NC CONTACTS	432	1	MP1-10B	ABB	1SFA 611 100 R1006	
				FOR RESET OF LOCKOUT RELAY (86T2)			MCBH-20		1SFA 611 605 R1102	
	6	U20.101	TS-4	TEST SWITCH FOR MECH PROTN.	436	1	RTXP24	ABB	RK 926 315-AS	
D	7	U24.5001	86T2	TRIP UNIT (86T2) COMPRISING OF:	432	1	MVAJ405	ALSTOM	MVAJ405 RA0804A	
				TRIPPING RELAY : HIGH BURDEN TYPE						
				AUX.VOLTAGE : 110-125V DC						
				CONTACTS : 6NO + 4NC						
				FLAG : HAND RESET						
				CONTACT MECHANISM : HAND & ELECTRICALLY RESET						
	8	U24.5002	94T2	TRIP UNIT (94T2) COMPRISING OF:	432	1	MVAJ101	ALSTOM	MVAJ101RA0800A	
				AUX. VOLTAGE : 110/125V DC						
E				CONTACT DATA : 10 NO						
				FLAG : HAND RESET						
				CONTACT MECHANISM : SELF RESET						
F										
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid sa	
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kv GT-3 RELAY PANEL-2 +R04.2			
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			

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SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHT.	QTY.	TYPE	MAKE	ORDER INFORMATION	
9			DUAL COIL TARGET RELAY FOR MECHANICAL PROTECTION	433	11	RXSF 1	ABB	RK 271 018-AN	
			AUXILIARY VOLTAGE : 110-125V DC	434					
			CONTACT DATA : 3NO PER COIL	435					
			FLAG : HAND RESET	436					
	U28.101	23X	A: TRANSFORMER COOLER FAIL						
		63QL-1X	B: MAIN TANK OIL LEVEL LOW ALARM						
	U28.107	630H-1X	A: MAIN TANK OIL LEVEL HIGH ALARM						
		63QL-2X	B: OLTC OIL LEVEL LOW ALARM						
	U28.301	630H-2X	A: OLTC OIL LEVEL HIGH ALARM						
		96D-1X	B: MAIN TANK PRESS RELIEF ALARM						
	U28.307	96D-2X	A: OLTC PRESS RELIEF ALARM						
		96-1X	B: BUCHLZ STAGE-1 ALARM						
	U28.113	63QP-1X	A: OLTC PROTECTIVE ALARM						
		63GD-1X	B: GAS DETECT RELAY ALARM						
	U28.313	26D-1X	A: MAIN TR OIL TEMP STAGE-1 ALARM						
		26D-2X	B: MAIN TR OIL TEMP STAGE-2 ALARM						
	U28.119	49W1-5X	A: WDG TEMP STAGE-2 ALARM (HV)						
		49W1-6X	B: WDG TEMP STAGE-2 TRIP (HV)						
	U28.319	63 QSX	A: SUDDEN PRESSURE TRIP						
		96-2X	B: BUCHLZ STAGE-2 TRIP						
	U28.125	63 QP-2X	A: OLTC TRIP PROTECTIVE RELAY TRIP						
		49W2-5X	B: WDG TEMP HIGH STAGE-1 TRIP (LV)						
	U28.325	49 W2-6X	A: WDG TEMP HIGH STAGE-2 TRIP (LV)						
		FPX	B: FIRE PROTN.						
	U28.343	96-3	A: BUCHLZ CONSERVATOR ALARM						
		96-4	B: BUCHLZ CONSERVATOR TRIP						
	U28.131	74R2	DUAL TARGET RELAY REVERSE FLAG +R2 & R3 DC/SUPPLY SPARE	432	2	RXSF 1	ABB	RK 271 019-AN	
	U28.331	74R3	AUXILIARY VOLTAGE : 110-125V DC	436					
			CONTACT DATA : 1NO + 2NC PER COIL						
			FLAG : SELF RESET						
	U28.137	96/63X	HIGH SPEED TRIP RELAY)						
	U28.143	49X	AUXILIARY VOLTAGE : 110-125V DC	436	2	RXMS 1	ABB	RK 216 463-AP	
			CONTACT DATA : 6NO						
	U28.337	T1	TIMER FOR MECHANICAL PROTECTION						
			AUXILIARY VOLTAGE : 110-125V DC	436	1	RXKL 1	ABB	1MRK 000 066-AB	
			CONTACT DATA : 2C/O						
AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656				LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء National Grid SA			
			DRAWN BY RIZ CHECKED BY JKR	132/13.8kV GT-3 RELAY PANEL-2 +R04.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
01	13 49	FACTORY ASBUILT	DATE STARTED 24.01.2013 DATE COMPLETED _____	S/S 8709-132/13.8KV IN AL-KHARJ CITY					REV. NO.
00	13 04	FOR APPROVAL	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA					01
REV. NO.	DATE	DESCRIPTION				-	C421	CD322933	L02L03

NG/D2-D (2012/01)

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SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHT.	QTY.	TYPE	MAKE	ORDER INFORMATION
10			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	416	3	S282 UC K6 S2-H02	ABB	GHS S282 0164 R0317 GH S270 191 6R0003
	U39.5001	Q1	R2€ SUPPLY					
	U39.5002	Q2	R3€ SUPPLY					
	U36.5001	Q3	TC2 SUPPLY					
11	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC	411	2	USM45&USMS45	ABB	74140 & 74180
		C02	CONVENIENCE OUTLET 10A, 220V AC					
		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS	411	2	S202P-K10 S2C-H11L	ABB	2CDS 252 001 R0427 GH 270 1917 R001
		C3	THERMOSTAT FOR SPACE HEATER, 5-36°C	411	1	SK 3110	RITTAL	SK 3110
12	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE	411	1	EDF410	EDISON	EDF410
		C7	ON/OFF SWITCH FOR SPACE HEATER	411	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101
		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	411	1	LS30P13B02	ABB	1SBV 010 213 R1202
		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY	411	1	T4	SUNON	SP-20W
		SH	SPACE HEATER, 150W, 120V, 60Hz	411	1	RICA	GRUPPO	1FZEK006C001
13		R1	FIXED RESISTOR FOR TRIP CIRCUIT SUPERVISION CKT.	491	2	GRF 30/200	DANOTHERM	GRF 30/200
		R2	2.5Kohm,15W					
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B	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET. NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	13		X1	BLOT CONNECTING TERMINAL BLOCKS DISCONNECTIBLE FOR CT CIRCUITS		502	45	OTTA 6T P/P	PHOENIX	0790462
			X2	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR VT CIRCUITS		502	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
C			X3	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR AC CIRCUITS		502	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X42	SPRING LOADED TERMINAL BLOCK FOR DC EXT. CIRCUITS		502	20	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400
			X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		502	90	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
D			X6	SPRING LOADED TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		502	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			X62	KNIFE TYPE TERMINAL BLOCKS DISCONNECTIBLE FOR STN.-COM ALARM CIRCUITS		502	20	M6/8.SNB	ENTRELEC	1SNA 115 688 R2500
			XTJ	SPRING LOADED TERMINAL BLOCK KNIFE FOR TELEPHONE JACK		502	5	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
E			XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER		502	3	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
			XD	TERMINAL BLOCKS WITH BLOCKING DIODE, Vrrm=1kV, If=3A AND SURGE TRAP, ENERGY ABSORPTION RATING 8J (10/1000mS)		436	10	M4/6.S IN5408 V150ZA1	ENTRELEC MEJDAF RS	11521310 02-049 239-270
			X92	SPRING LOADED TERMINAL BLOCK KNIFE TYPE FOR SPARE CONTACTS		502	20	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
F			X53	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS		502	25	M6/8.RS	ENTRELEC	1SNA 115 685 R1200
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS			
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-3 RELAY PANEL-2 +R04.2			
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY			
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
							- C421 CD322933		SHT CONT. 01	
									L04 L05	

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LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U05.5001	U05.5001 87T-2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U12.5001	U12.5001 TS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5002	U12.5002 TS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5003	U12.5003 TS-3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U12.5004	U12.5004 TS-4	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U16.5001	U16.5001 S86T2	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50X15mm	4mm
U20.101	U20.101 TS-4	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U24.5001	U29.5001 86T2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U24.5002	U29.5002 94T2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.101	U28.101 23X 63QL-1X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.107	U28.107 63QH-1X 63QL-2X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.301	U28.301 63QH-2X 96D-1X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.307	U28.307 96D-2X 96-1X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.113	U28.113 63QP-1X 63GD-1X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.313	U28.313 26D-1X 26D-2X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.119	U28.119 49W1-5X 49W1-6X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.319	U28.319 63Q-SX 96-2X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.125	U28.125 63QP-2X 49W2-5X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.325	U28.325 49W2-6X SPARE	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.131	U28.131 74R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.331	U28.331 74R3	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.137	U28.137 63/49/96X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.337	U28.337 T1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.149	U28.149 49X	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.349	U28.349 96-3/96-4	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.143	U28.143 R1	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm
U28.343	U28.343 R2	ALUMINUM PAPER FOIL	BLACK LETTERS	50X10mm	3mm

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid SA</div>										
01		13 49		FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kV GT-3 RELAY PANEL-2 +R04.2		INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
00		13 04		FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		-		C421		CD322933		SHT		CONT.	
REV. NO.		DATE		DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA								L05		L06	
																		01	

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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD. 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																																																																																																						
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA							

NG/D2-D (2012/01)

DMS VECTOR

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G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00			JOB ORDER NO. S-13656			GRAPHICAL SYMBOLS FOR DIAGRAMS			<div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>									
										132/13.8KV GT-3 RELAY PANEL-1/2												
	01 13 49 FACTORY ASBUILT			DRAWN BY RIZ CHECKED BY JKR						S/S 8709-132/13.8KV IN AL-KHARJ CITY			INDEX		PLANT NO.		DRAWING NUMBER		SHEET NO.		REV. NO.	
	00 13 04 FOR APPROVAL			DATE STARTED 24.01.2013 DATE COMPLETED _____						RIYADH SAUDI ARABIA			-		C421		CD322934		012 013		01	

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THIS DRAWING AND THE INFORMATION CONTAINED HEREIN ARE THE SOLE PROPERTY OF NATIONAL GRID SA NO REPRODUCTION IN FULL OR IN PART SHALL BE OBTAINED FROM THIS DOCUMENT WITHOUT THE WRITTEN CONSENT OF ITS OWNER.

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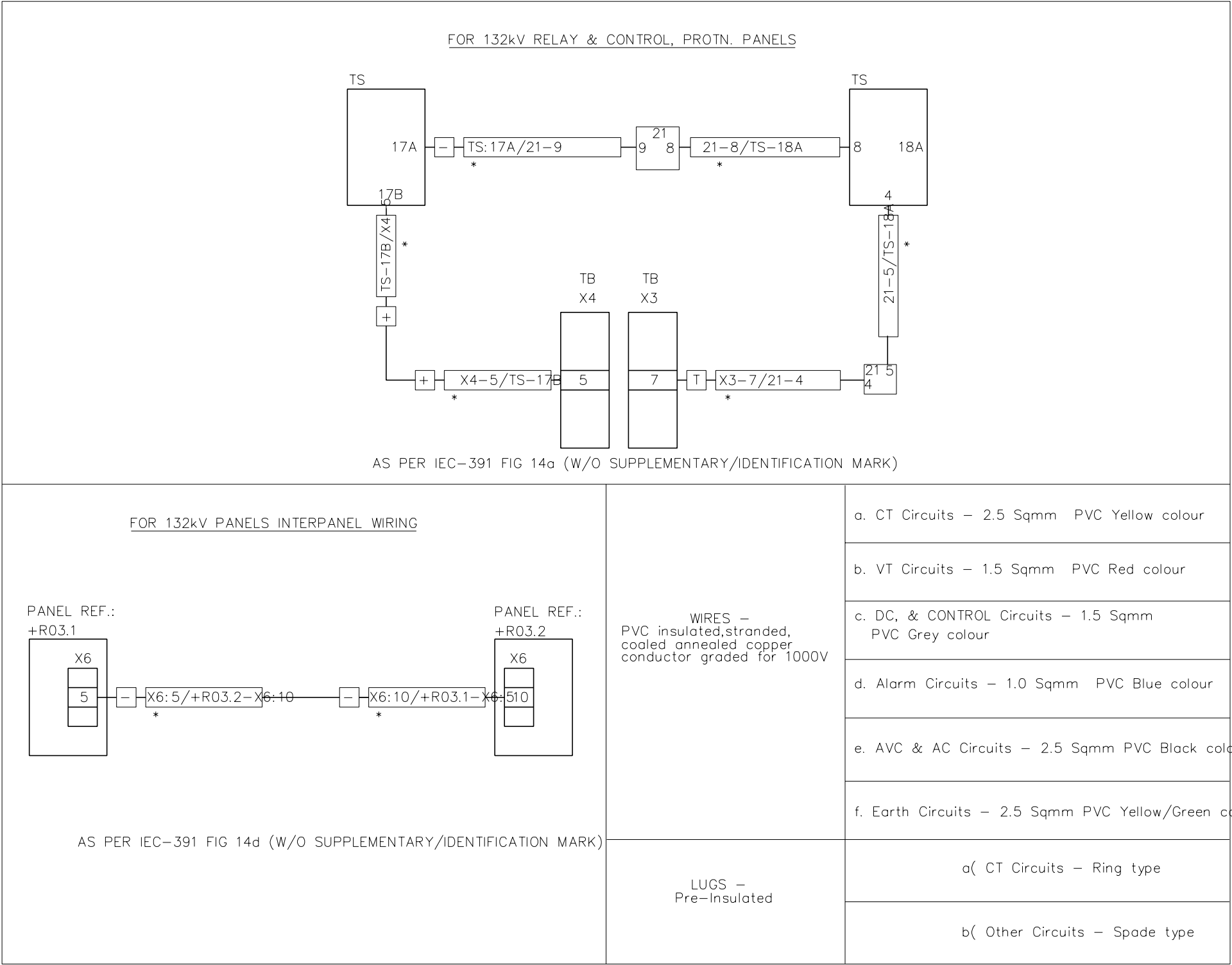
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NOTE:1 ADDITIONAL MARKING AS APPLICABLE

NOTE:2 FERRULE NUMBERING WILL BE BLACK LETTERS ON YELLOW TUBE

3.2 mm for 1.5 sq mm wires and

4.2 mm for 2.5 sq mm wires

( As per 31-TMSS-1, REV 0 )

NOTE:3 STARTING POINT OF THE FERRULE LEFT TO RIGHT

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR	
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	

FERRULE AND WIRING DETAILS	
132/13.8KV GT-3 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH SAUDI ARABIA	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD322934		SHT	CONT.
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MANUFACTURER				SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION					SS 8709 132kV RELAY PANELS	
				CD322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1
					132/13.8kV GT-3 RELAY PANEL -2	+R04.2
				CD322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1
					132/13.8kV GT-3 RELAY PANEL -2	+R04.2
				CD-322934	132/13.8kV GT-3 RELAY PANEL -1	+R04.1
					132/13.8kV GT-3 RELAY PANEL -2	+R04.2
				CD-322936	132/13.8kV TRANSFORMER-1,2& 3 AVC PANEL	+AVC
				CD-322922	132KV SPARE-1 UGF RELAY PANEL -1	+R07.1
					132KV SPARE-1 UGF RELAY PANEL -2	+R07.2
				CD-322916	132KV 8020 UGF RELAY PANEL -1	+R02.1
					132KV 8020 UGF RELAY PANEL -2	+R02.2
				CD-322919	132KV 8710 UGF RELAY PANEL -1	+R04.1
					132KV 8710 UGF RELAY PANEL -2	+R04.2
				CD-322925	132KV SPARE-2 UGF RELAY PANEL -1	+R06.1
					132KV SPARE-2 UGF RELAY PANEL -2	+R06.2
				CD-323012	132KV FOIP PANEL	+FOIP
				CD-322946	132kv BUS COUPLER-A	+R130
				CD-322948	132kv BUS COUPLER-B	+R230
				CD-322950	132kv BUS SECTION	+R120
CD-322991	132kv BUSBAR PROTECTION MAIN-1 CENTRAL UNIT PANEL	+BB1-1				
CD-322993	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-2				
CD-322995	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-3				
CD-322997	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-4				
CD-322999	132kv BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL	+BB1-5				
CD-323001	132kv BUSBAR PROTECTION MAIN-2 CENTRAL UNIT PANEL	+BB2-1				
CD-323003	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-2				
CD-323005	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-3				
CD-323007	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-4				
CD-323009	132kv BUSBAR PROTECTION MAIN-2 BAY UNIT PANEL	+BB2-5				

AS-BUILT BY _____ DATE _____		CONTRACT NO.	11131113/00		JOB ORDER NO.	S-13656	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		DRAWING REFERENCES	
00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
-	C421	CD322934		S/S 8709-132/13.8KV IN AL-KHARJ CITY RIYADH SAUDI ARABIA		- C421 CD322934 015 016 01	

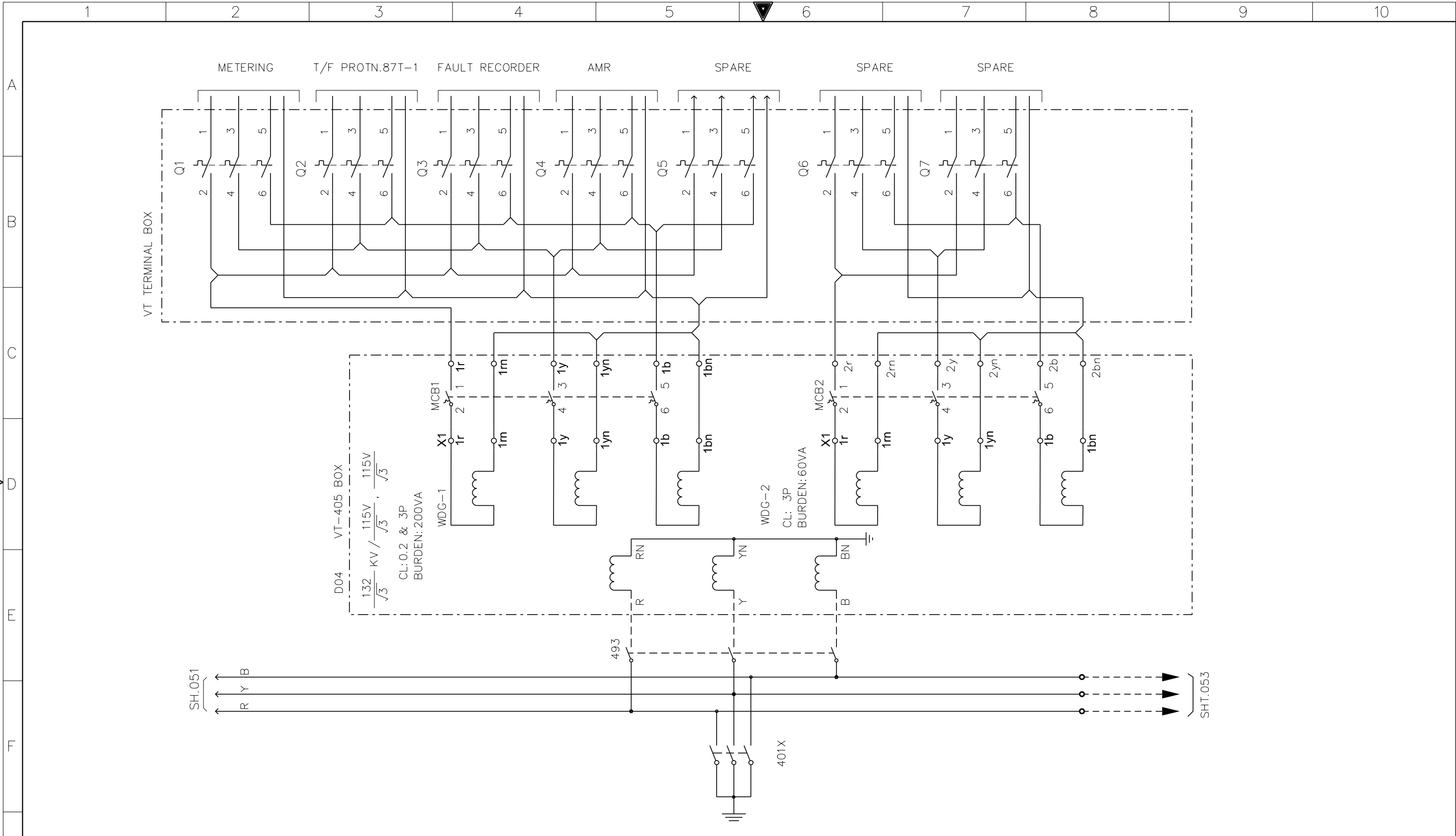
الشركة الوطنية لنقل الكهرباءNational Grid sa

NG/D2-D (2012/01)

DMS VECTOR NGD200

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G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">DRAWING REFERENCES</td><td colspan="2"><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء</div><div>National Grid sa</div></td></tr><tr><td></td><td></td><td></td><td colspan="2">DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u></td><td colspan="3">132/13.8KV GT-3 RELAY PANEL-1/2</td><td colspan="2">INDEX</td><td>PLANT NO.</td><td>DRAWING NUMBER</td><td colspan="2">SHEET NO.</td><td>REV. NO.</td></tr><tr><td></td><td>01</td><td>13 49</td><td colspan="2">FACTORY ASBUILT</td><td colspan="3">DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____</td><td colspan="3">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td colspan="2">-</td><td>C421</td><td>CD322934</td><td>SHT</td><td>CONT.</td><td>01</td></tr><tr><td></td><td>00</td><td>13 04</td><td colspan="2">FOR APPROVAL</td><td colspan="3">OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u></td><td colspan="3">RIYADH SAUDI ARABIA</td><td colspan="2"></td><td></td><td></td><td>016</td><td>051</td><td></td></tr><tr><td></td><td>REV. NO.</td><td>DATE</td><td colspan="2">DESCRIPTION</td><td colspan="10"></td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>					DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8KV GT-3 RELAY PANEL-1/2			INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.		01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY			-		C421	CD322934	SHT	CONT.	01		00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			RIYADH SAUDI ARABIA							016	051			REV. NO.	DATE	DESCRIPTION											
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>																																																																														
			DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8KV GT-3 RELAY PANEL-1/2			INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.																																																																										
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY			-		C421	CD322934	SHT	CONT.	01																																																																							
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AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ		CHECKED BY JKR	
00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

PRIMARY SYSTEM (GT-3)			
132/13.8KV GT-3 RELAY PANEL-1/2			
S/S 8709-132/13.8KV IN AL-KHARJ CITY			
RIYADH SAUDI ARABIA			

الشركة الوطنية لنقل الكهرباء



نقل الكهرباء

National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
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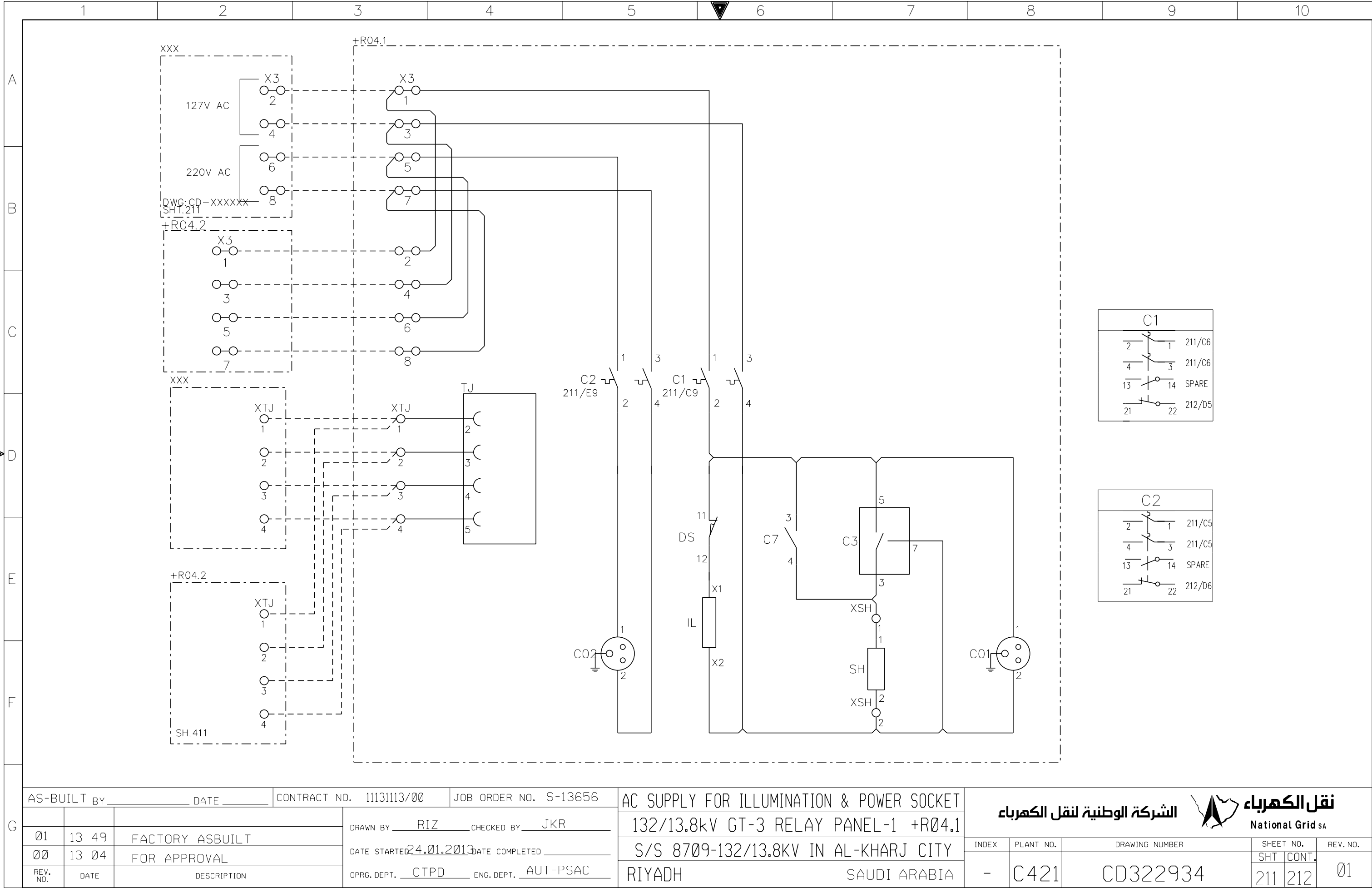






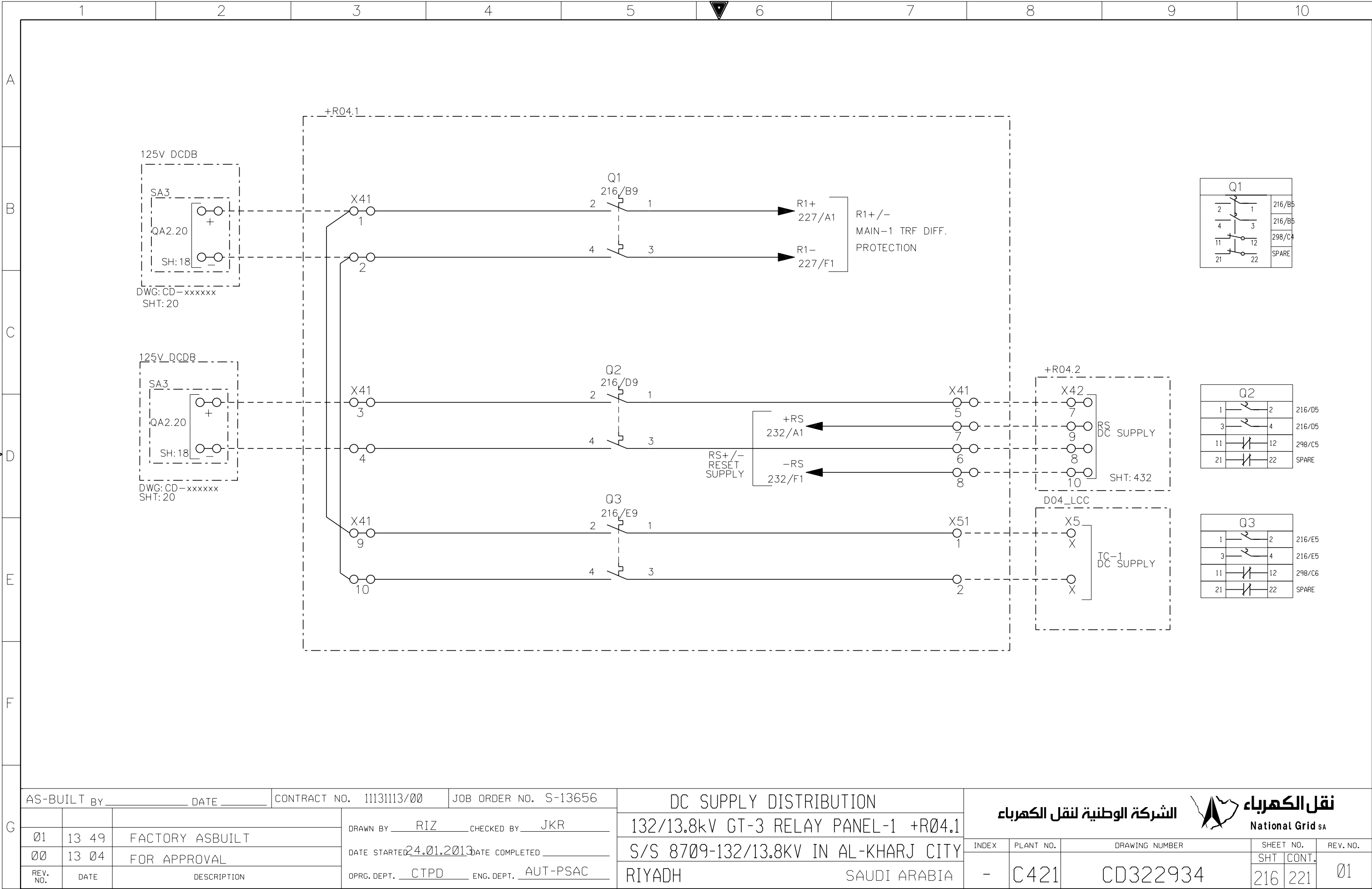




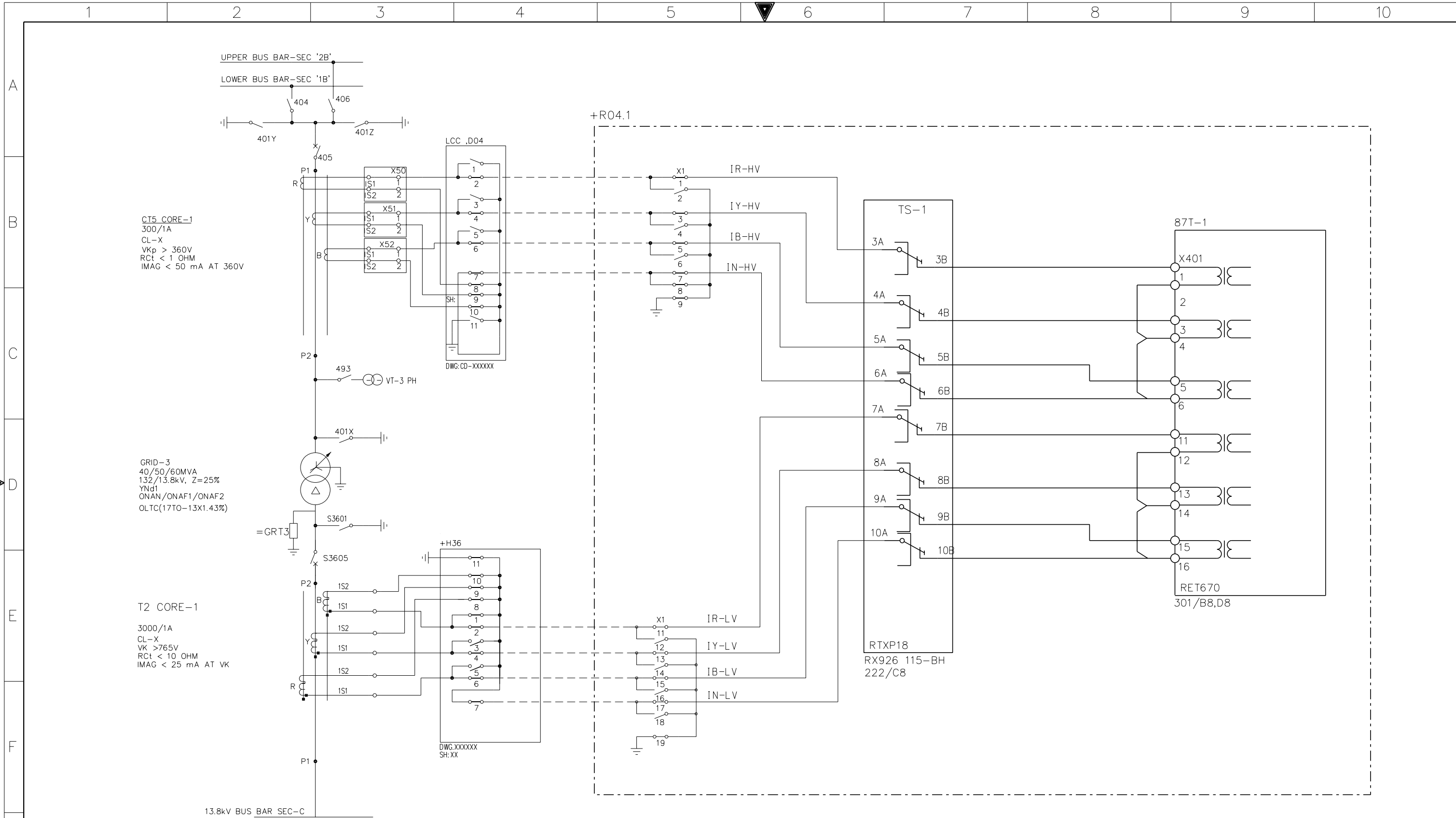



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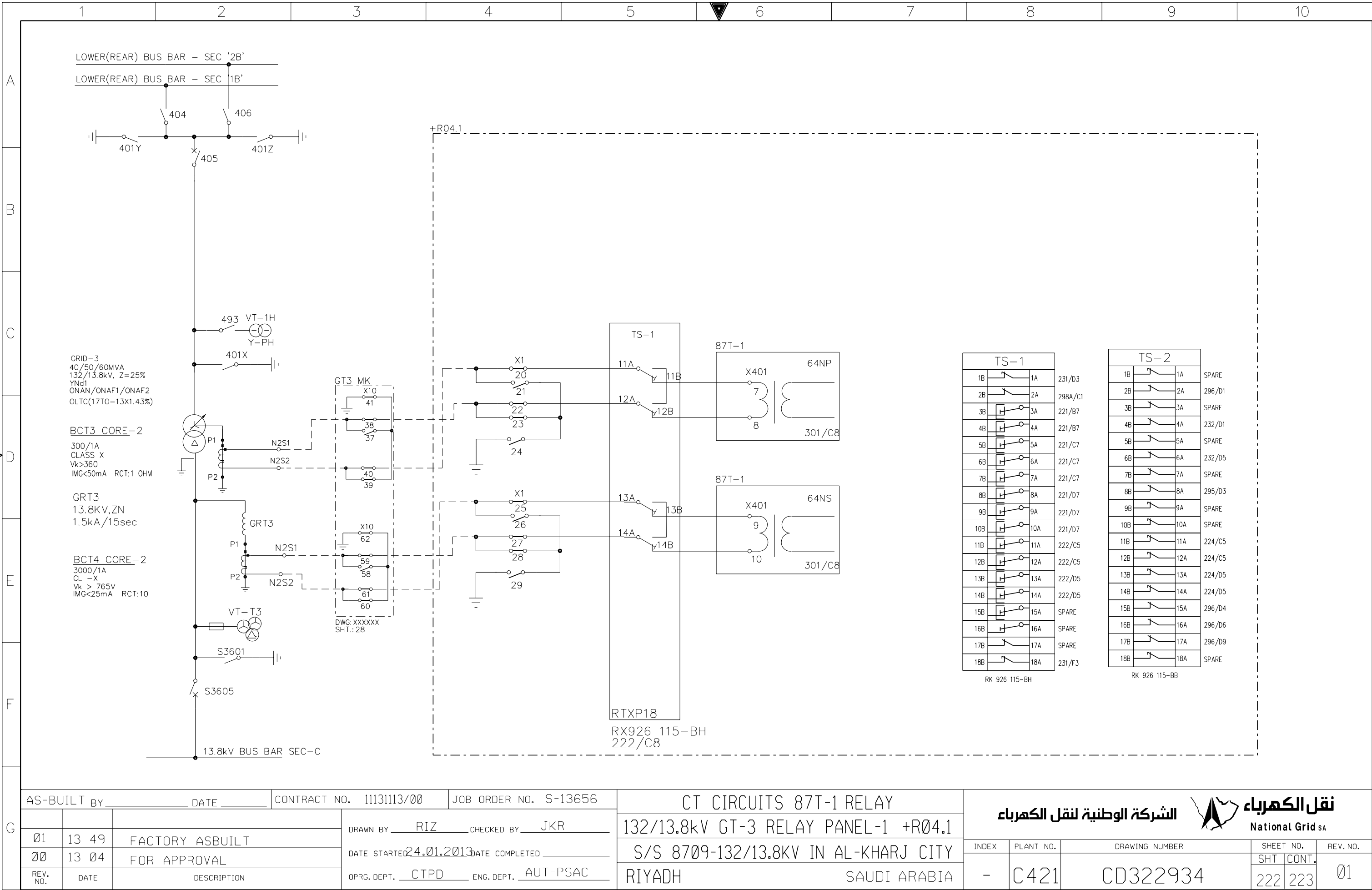




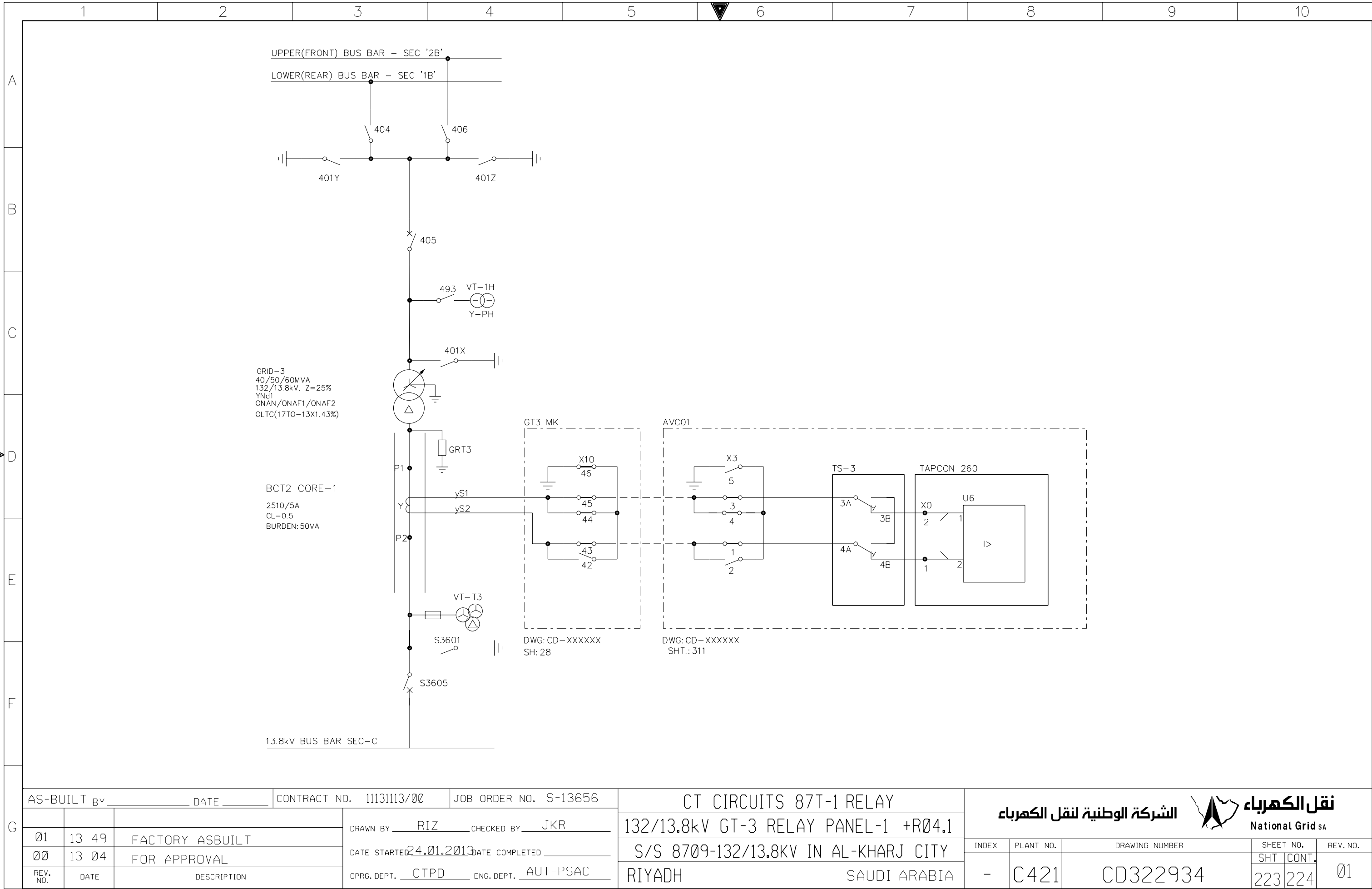
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G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CT CIRCUITS 87T-1 RELAY		<div><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء</div><div>National Grid sa</div></div>						
				DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8kV GT-3 RELAY PANEL-1 +R04.1									
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
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	REV. NO.	DATE	DESCRIPTION										221	222	



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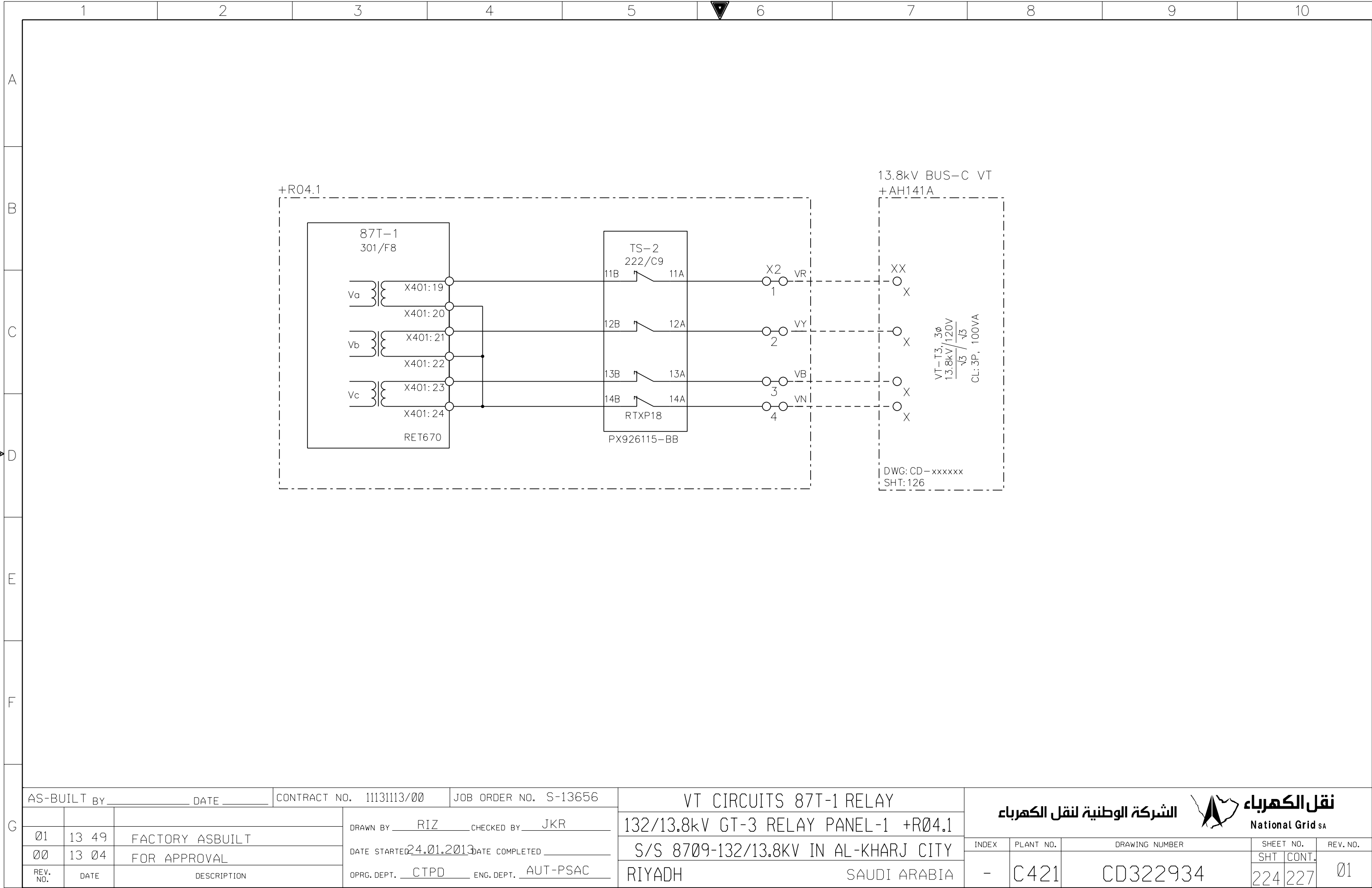


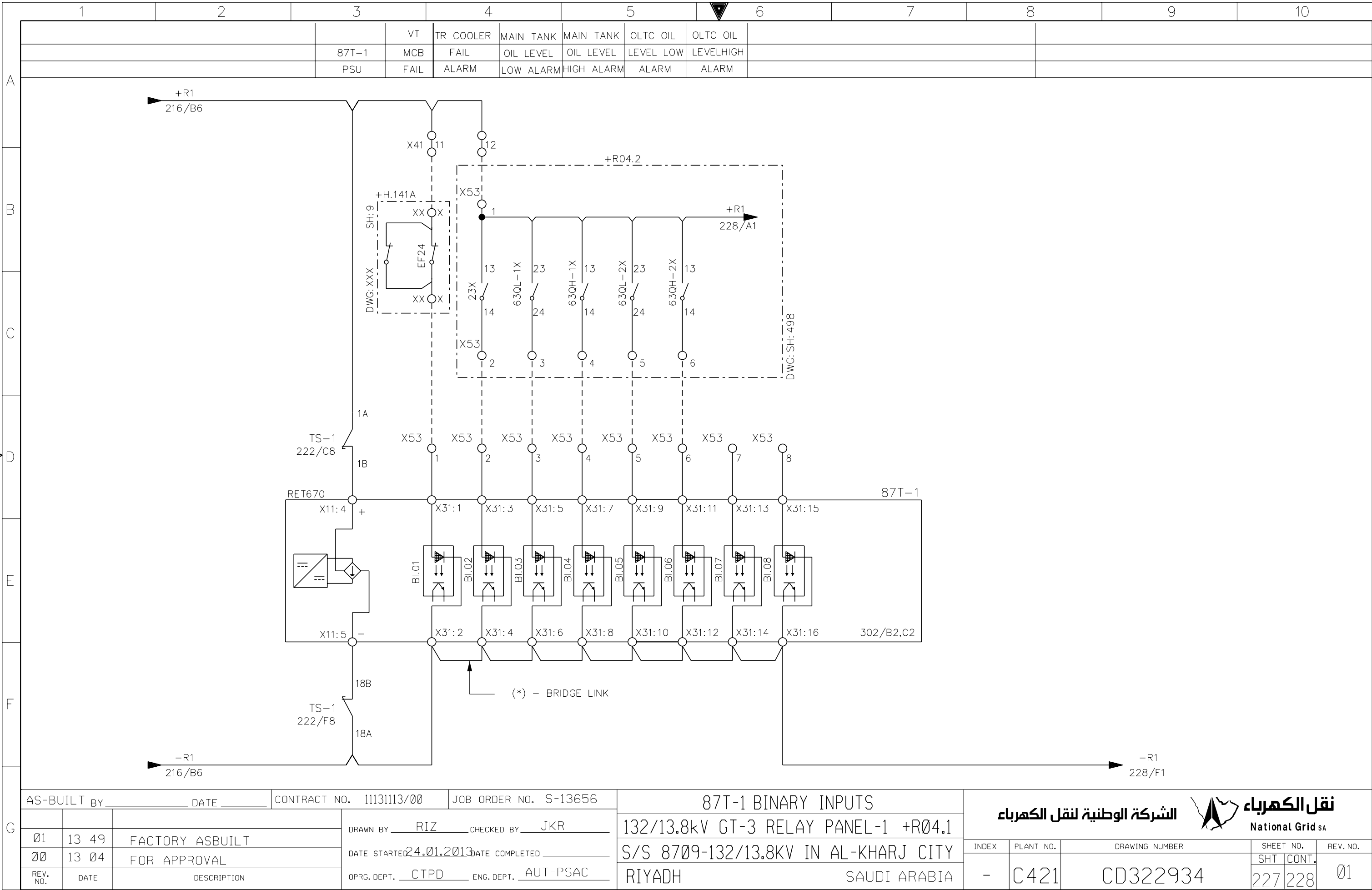
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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

CT CIRCUITS 87T-1 RELAY  
132/13.8kV GT-3 RELAY PANEL-1 +R04.1  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
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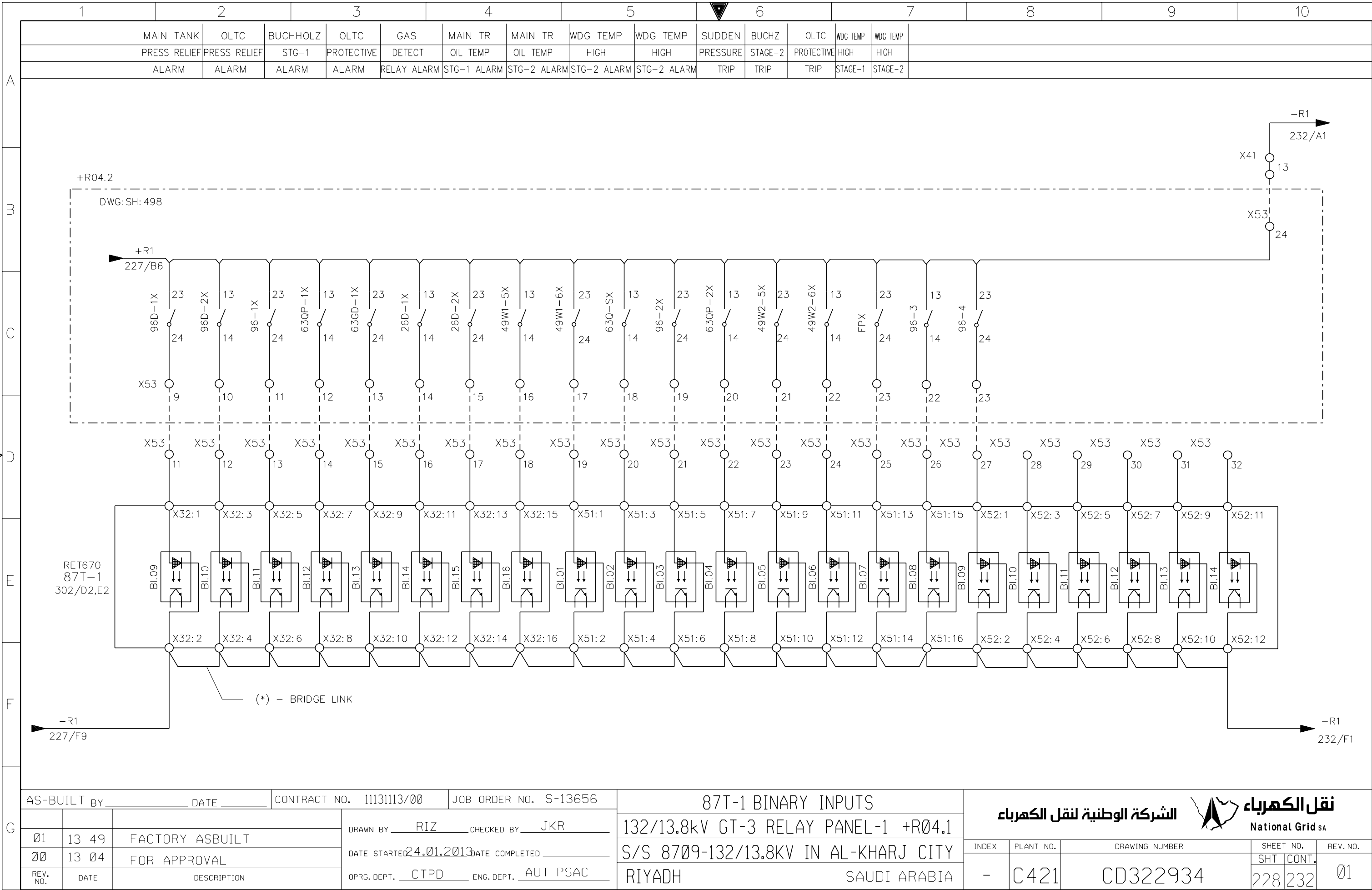
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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

87T-1 BINARY INPUTS  
132/13.8kV GT-3 RELAY PANEL-1 +R04.1  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD322934	SHT 227	CONT. 228
			01	





AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

87T-1 BINARY INPUTS

132/13.8kV GT-3 RELAY PANEL-1 +R04.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

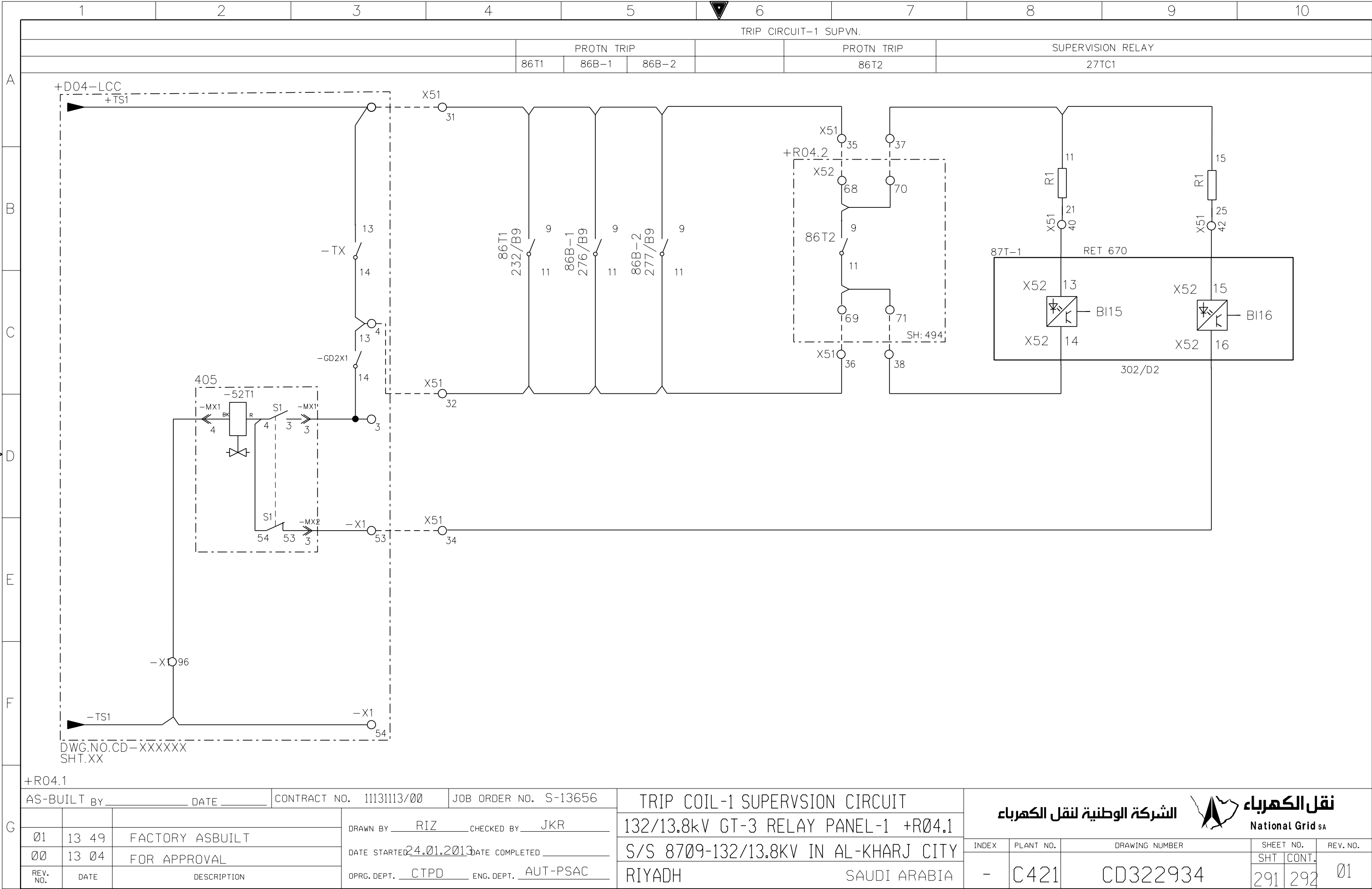
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء					نقل الكهرباء	
					National Grid SA	
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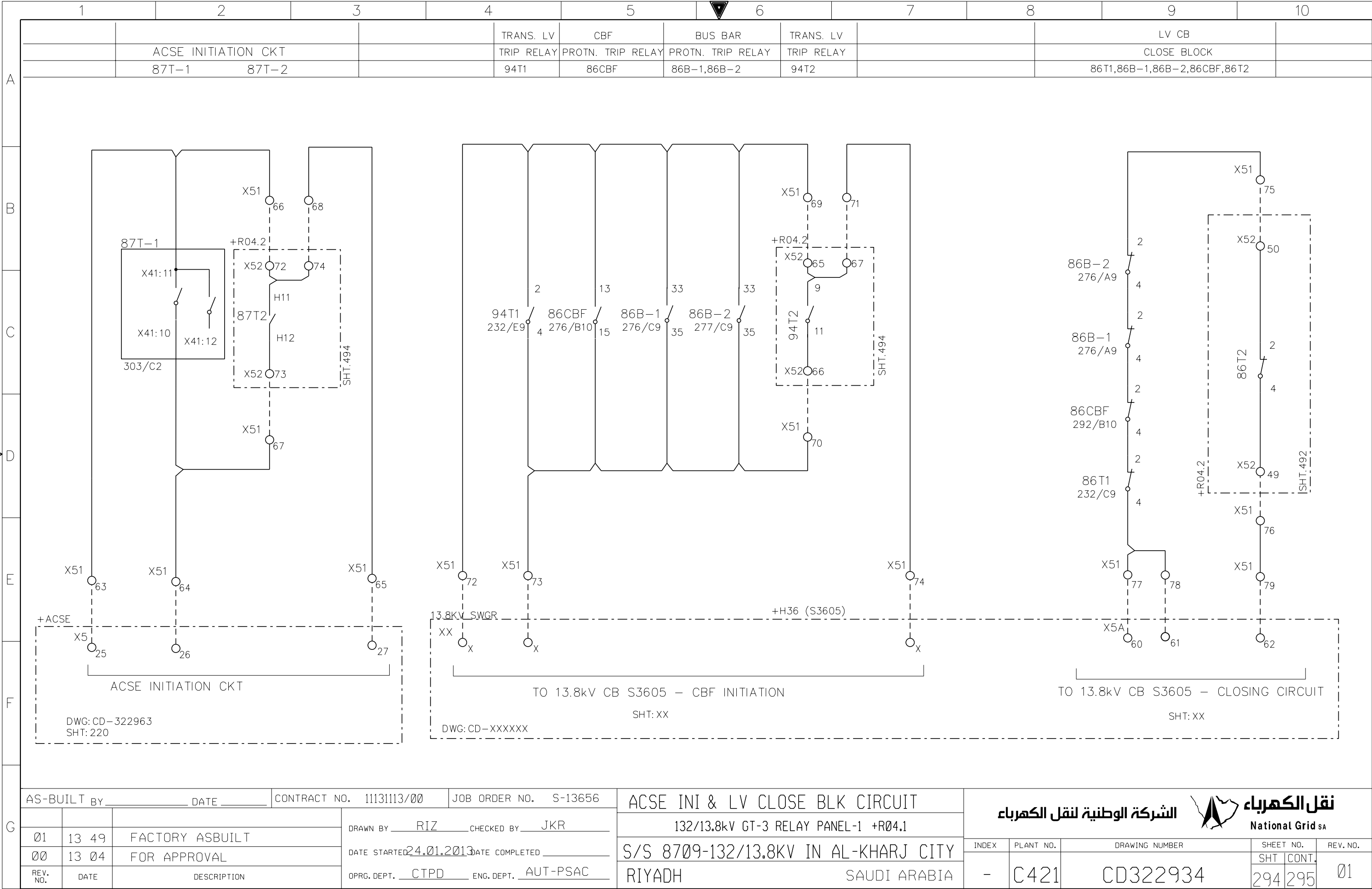




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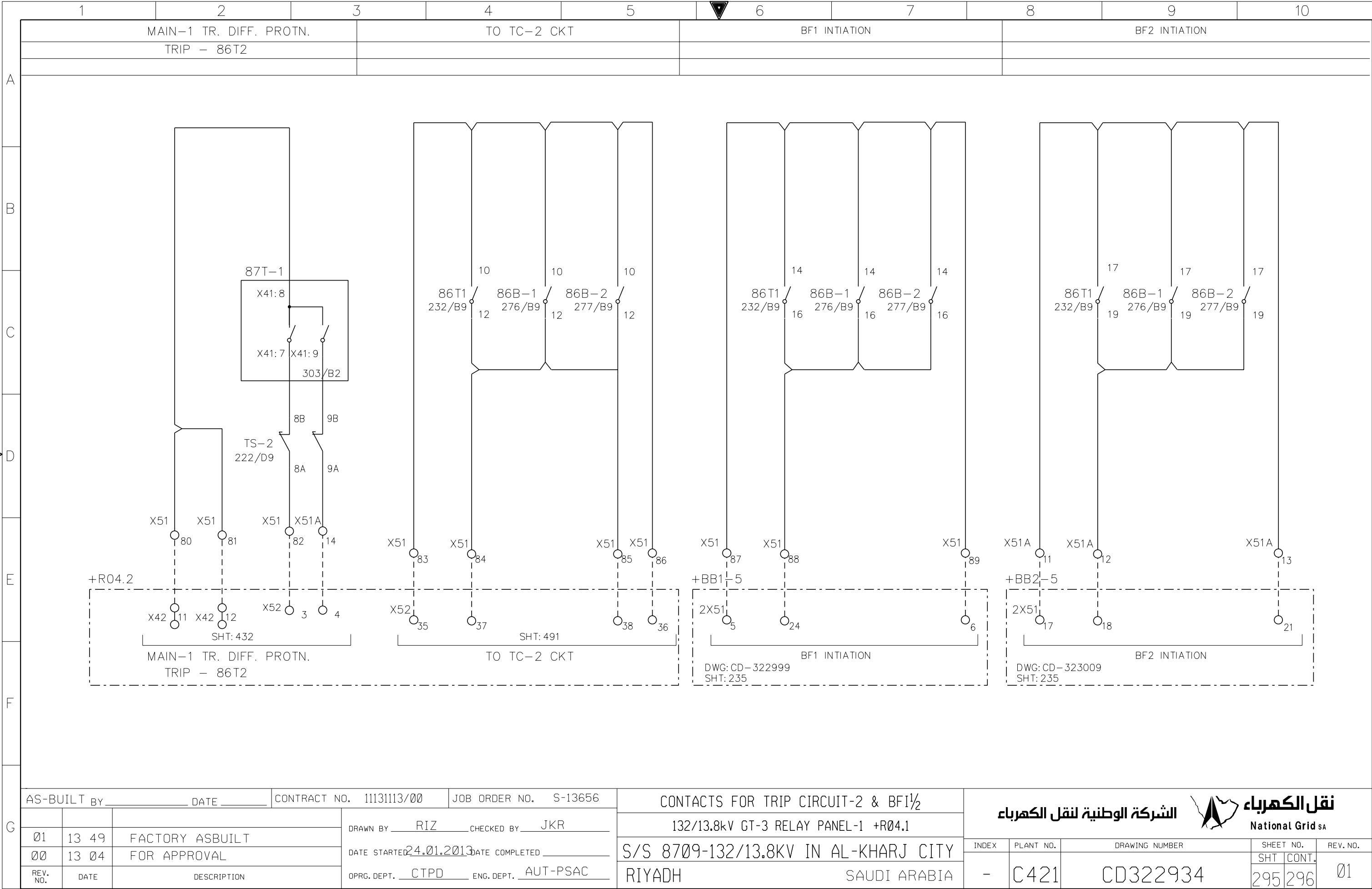


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	ACSE			TRANS. LV	CBF	BUS BAR	TRANS. LV	ACSE																																																						
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	86CBF	86B-1	86B-2	94T1	86CBF	86B-1,86B-2	94T2	86T1,86B-1,86B-2,86CBF,86T2																																																						
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CONTACTS FOR ACSE INITIATION & LV TRIPPING TC			<div><div>الشركة الوطنية لنقل الكهرباء National Grid SA</div><div><table><tr><td>INDEX</td><td>PLANT NO.</td><td>DRAWING NUMBER</td><td>SHEET NO.</td><td>REV. NO.</td></tr><tr><td>-</td><td>C421</td><td>CD322934</td><td>293</td><td>294</td></tr></table></div></div>		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	-	C421	CD322934	293			294																																							
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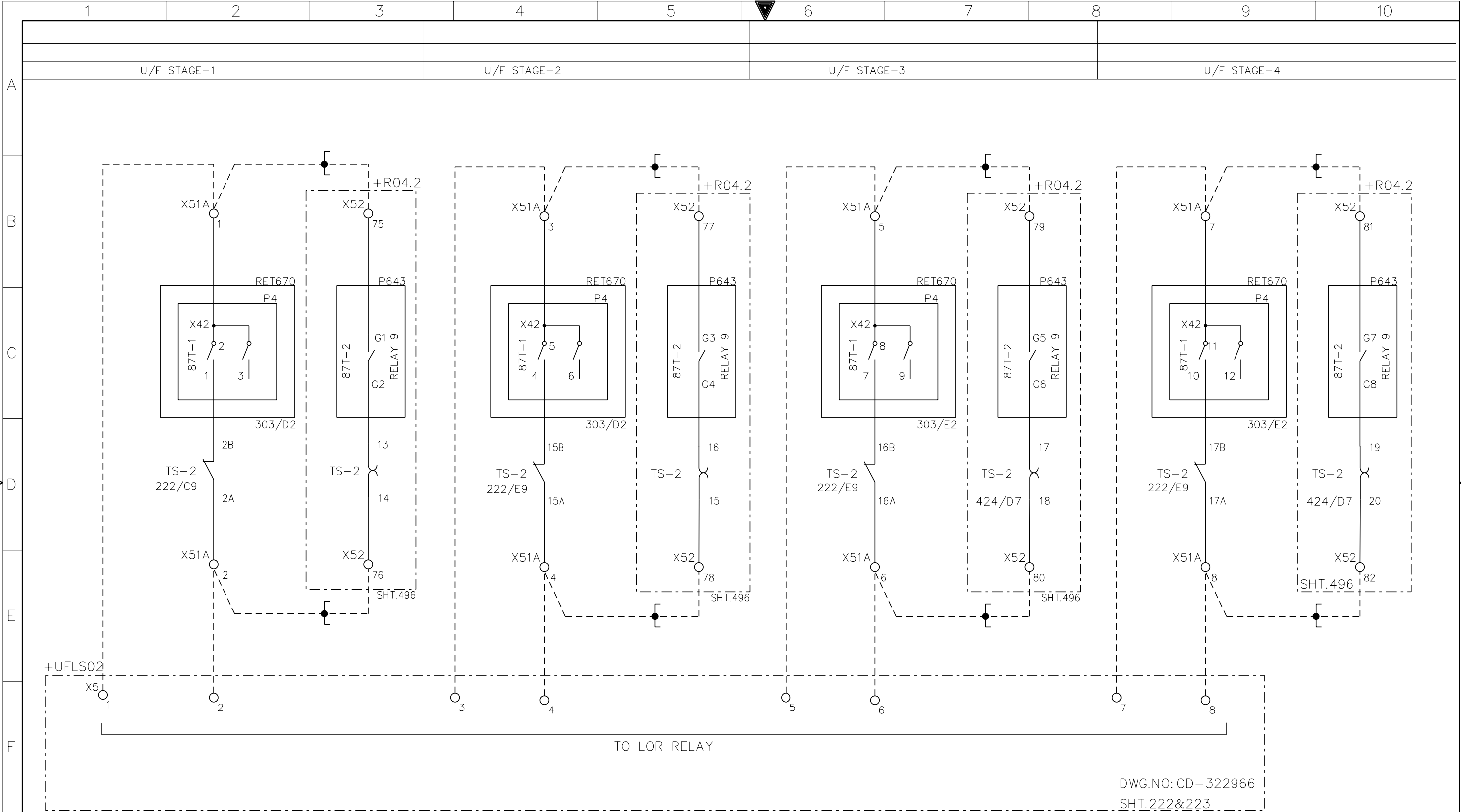


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ACSE INI & LV CLOSE BLK CIRCUIT		<div>نقل الكهرباء</div> <div>الشركة الوطنية لنقل الكهرباء</div> <div>National Grid sa</div>						
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR		132/13.8kV GT-3 RELAY PANEL-1 +R04.1								
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-	C421	CD322934		SHT 294	CONT. 295	01





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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

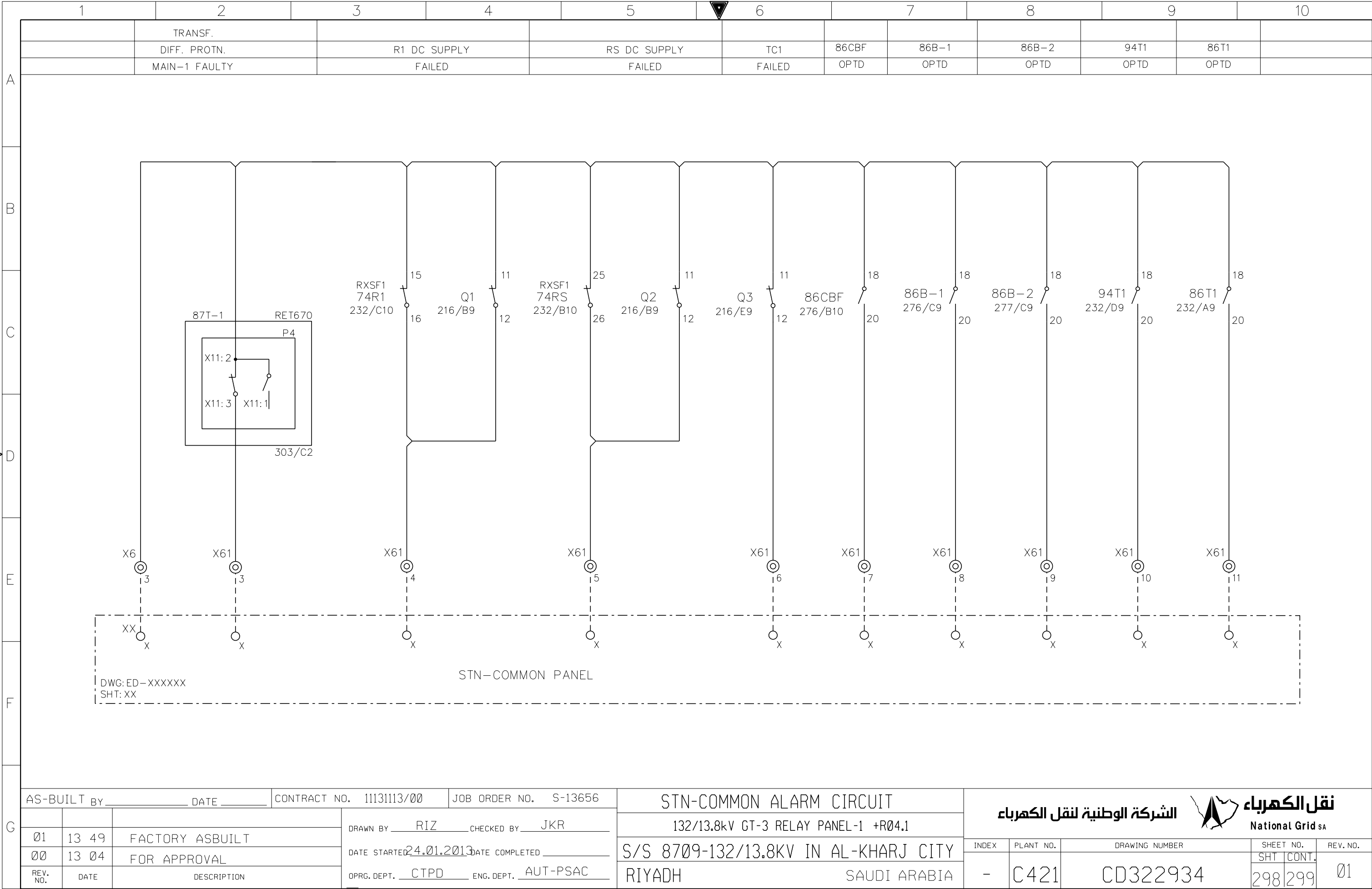
CONTACTS FOR U/F LOAD SHEDDING			
132/13.8kV GT-3 RELAY PANEL-1 +R04.1			
S/S 8709-132/13.8KV IN AL-KHARJ CITY			
RIYADH SAUDI ARABIA			

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid SA

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
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AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

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00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

STN-COMMON ALARM CIRCUIT

132/13.8kV GT-3 RELAY PANEL-1 +R04.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



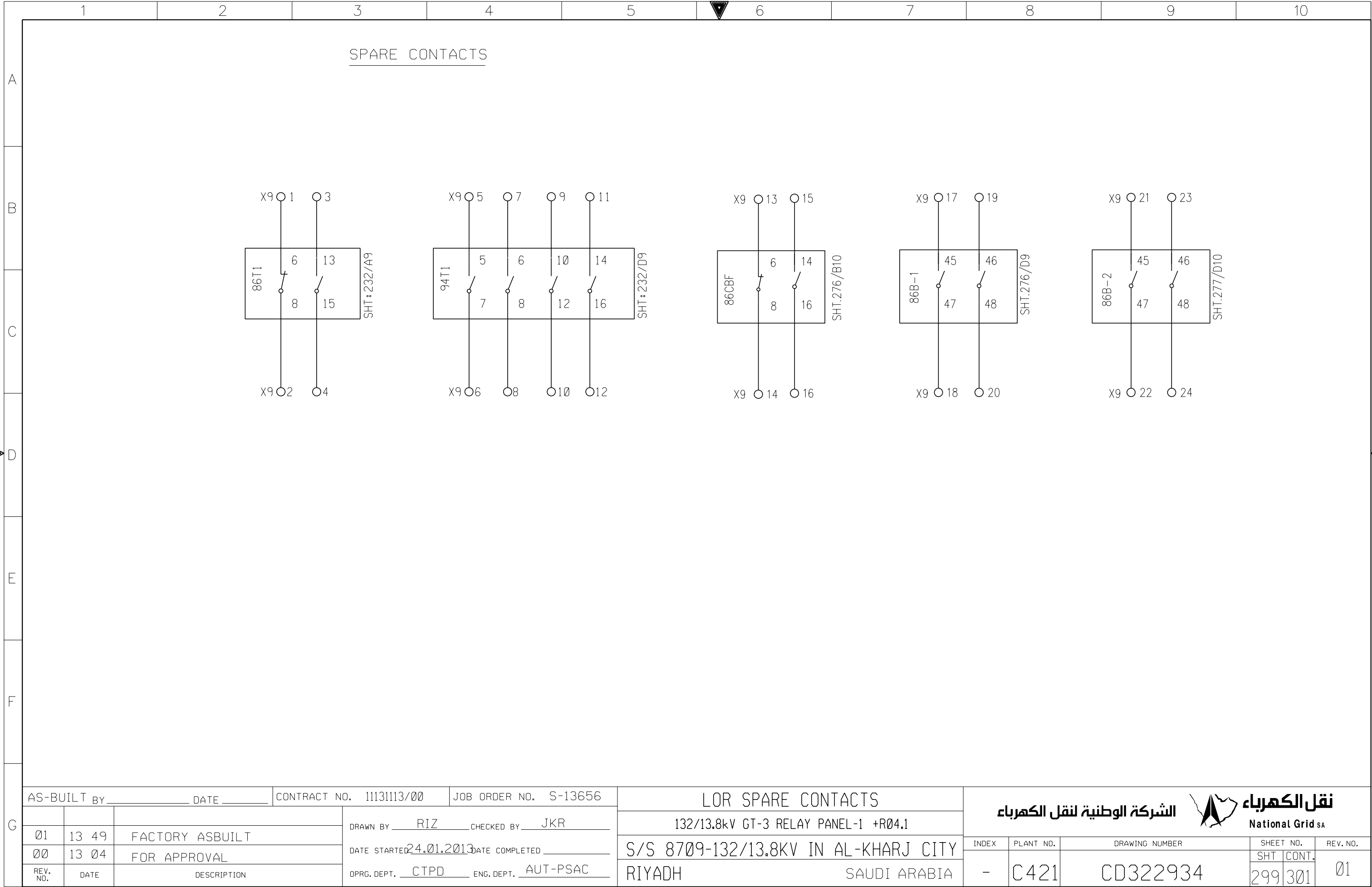
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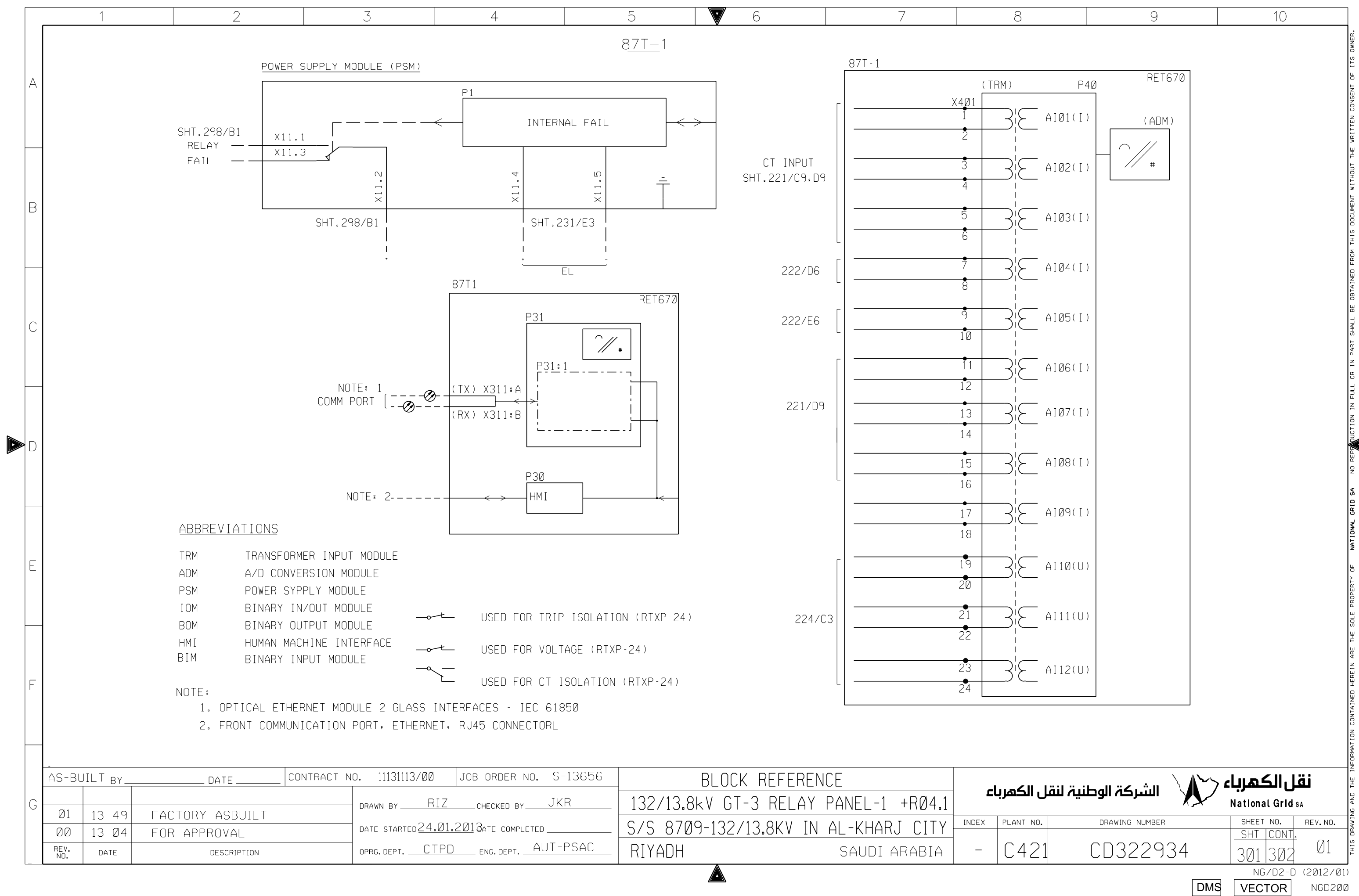
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DMS

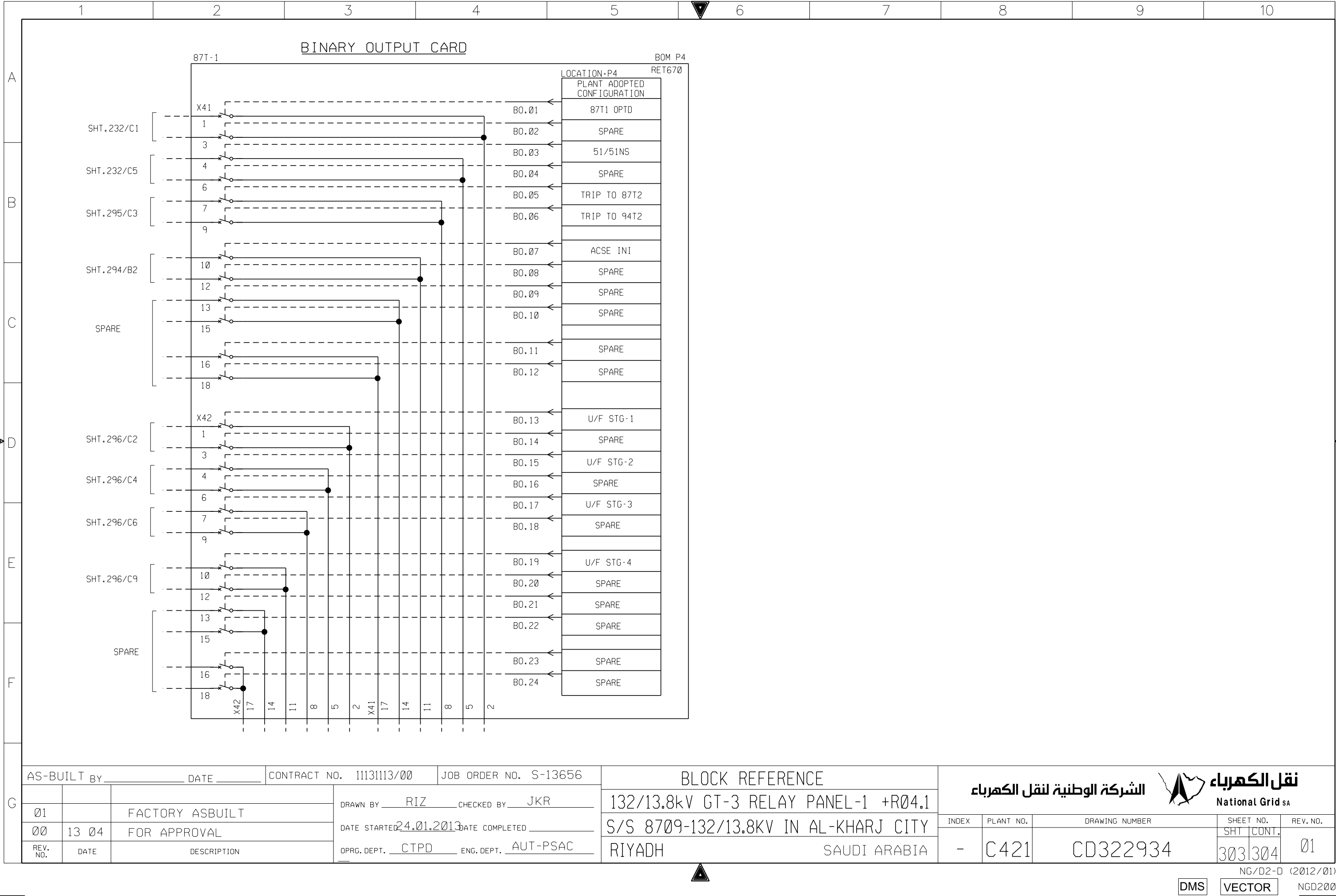
VECTOR

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221/B5

SPARE

221/E5

221/E5

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222/C4

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REFERENCE

224/C6

224/C6

224/C6

224/D6

SPARE

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211/A3

211/B3

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SPARE

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REFERENCE

212/B3

212/C3

298/E2

298/E3

298/E5

298/E6

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227/B4

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DC CKTS.

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REFERENCE

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291/A4

291/C4

291/E4

291/B7

291/C7

291/B7

291/C7

SPARE

SPARE

291/A9

291/B9

SPARE

292/A7

292/A9

292/B7

293/E1

293/E2

293/E3

293/E4

REFERENCE

216/B3

216/B3

216/D3

216/D3

216/D7

216/D7

216/D7

SPARE

SPARE

227/B4

227/B4

228/B10

232/B3

232/B5

SPARE

SPARE

SPARE

SPARE

SPARE

X51

CONTROL & PROT. CKTS

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19

20

REFERENCE

293/E4

293/E6

293/E7

293/B6

293/D6

293/B6

293/D6

293/E9

293/E9

293/E10

293/B9

293/E9

294/E1

294/E2

294/E3

294/B2

294/D2

294/B3

294/B6

294/D6

294/B7

294/E4

294/E4

294/E7

294/B10

294/D10

294/E9

294/E9

294/E10

295/E2

295/E2

295/E3

295/E3

295/E4

295/E5

295/E5

295/E6

295/E6

295/E7

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

SPARE

REFERENCE

227/D4

227/D4

227/D4

227/D5

227/D5

227/D5

227/D6

227/D6

SPARE

SPARE

228/D2

228/D2

228/D2

228/D3

228/D3

228/D3

228/D4

228/D4

228/D5

228/D5

228/D5

228/D6

228/D6

228/D6

228/D7

228/D7

228/D8

228/D8

228/D8

228/D9

228/D9

228/D9

SPARE

SPARE

SPARE

SPARE

X53

CONTROL & PROT. CKTS

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35

REFERENCE

212/B3

212/B3

298/E1

X6

ALM. CKT.

1

2

3

REFERENCE

211/C4

211/D4

SPARE

XSH

SPACE HEATER

1

2

3

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY \_\_\_\_\_ RIZ \_\_\_\_\_

CHECKED BY \_\_\_\_\_ JKR \_\_\_\_\_

DATE STARTED 24.01.2013

DATE COMPLETED \_\_\_\_\_

OPRG. DEPT. \_\_\_\_\_ CTPD \_\_\_\_\_

ENG. DEPT. \_\_\_\_\_ AUT-PSAC \_\_\_\_\_

TERMINAL BLOCK REFERENCE

132/13.8kV GT-3 RELAY PANEL-1 +R04.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

-

C421

CD322934

304

411

01

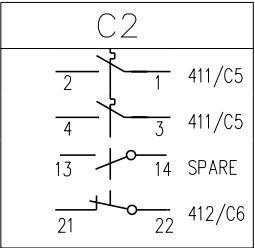
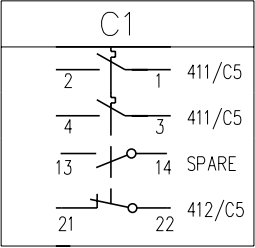
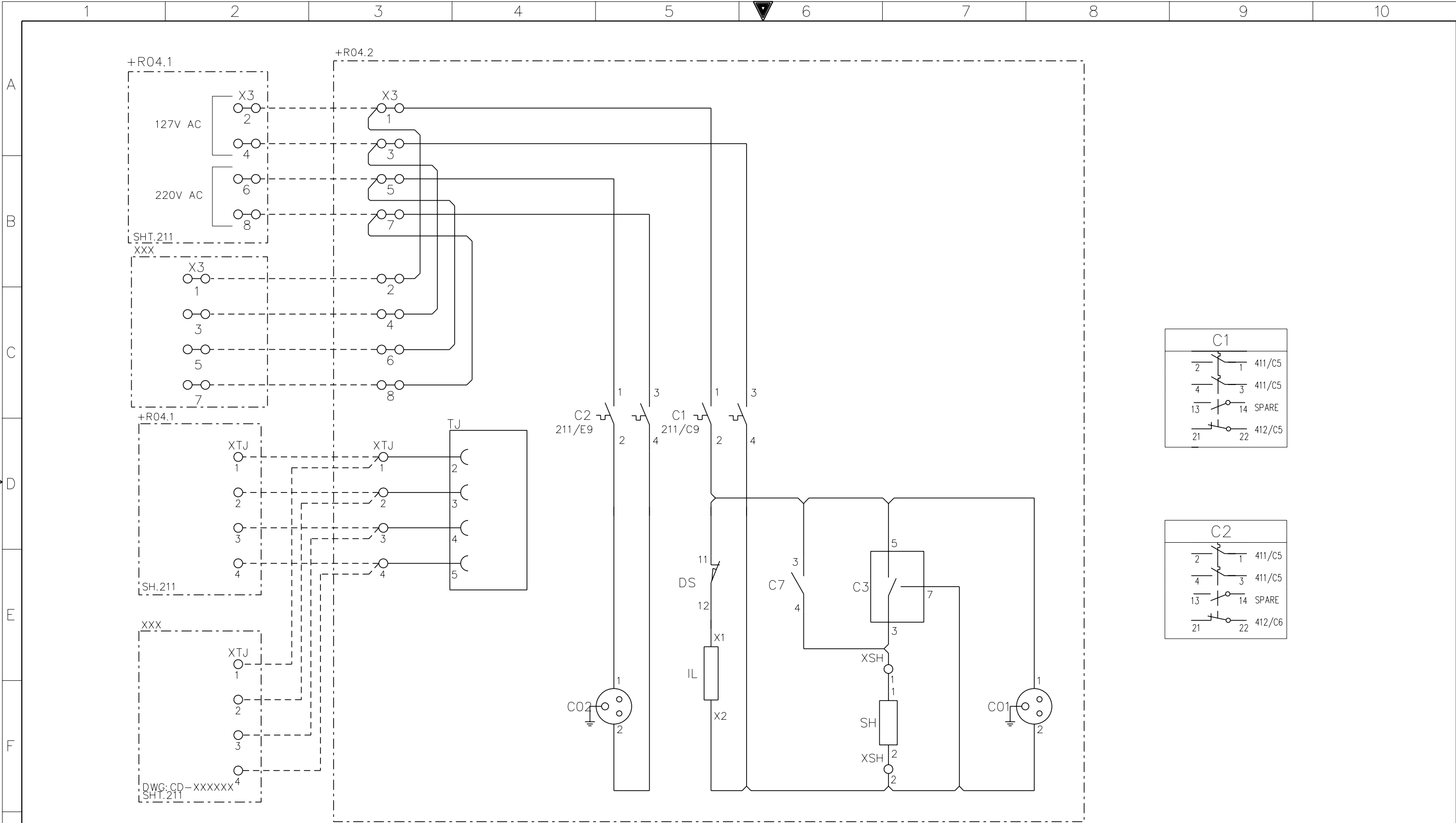
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NG/D2-D (2012/01)

DMS VECTOR

NGD200

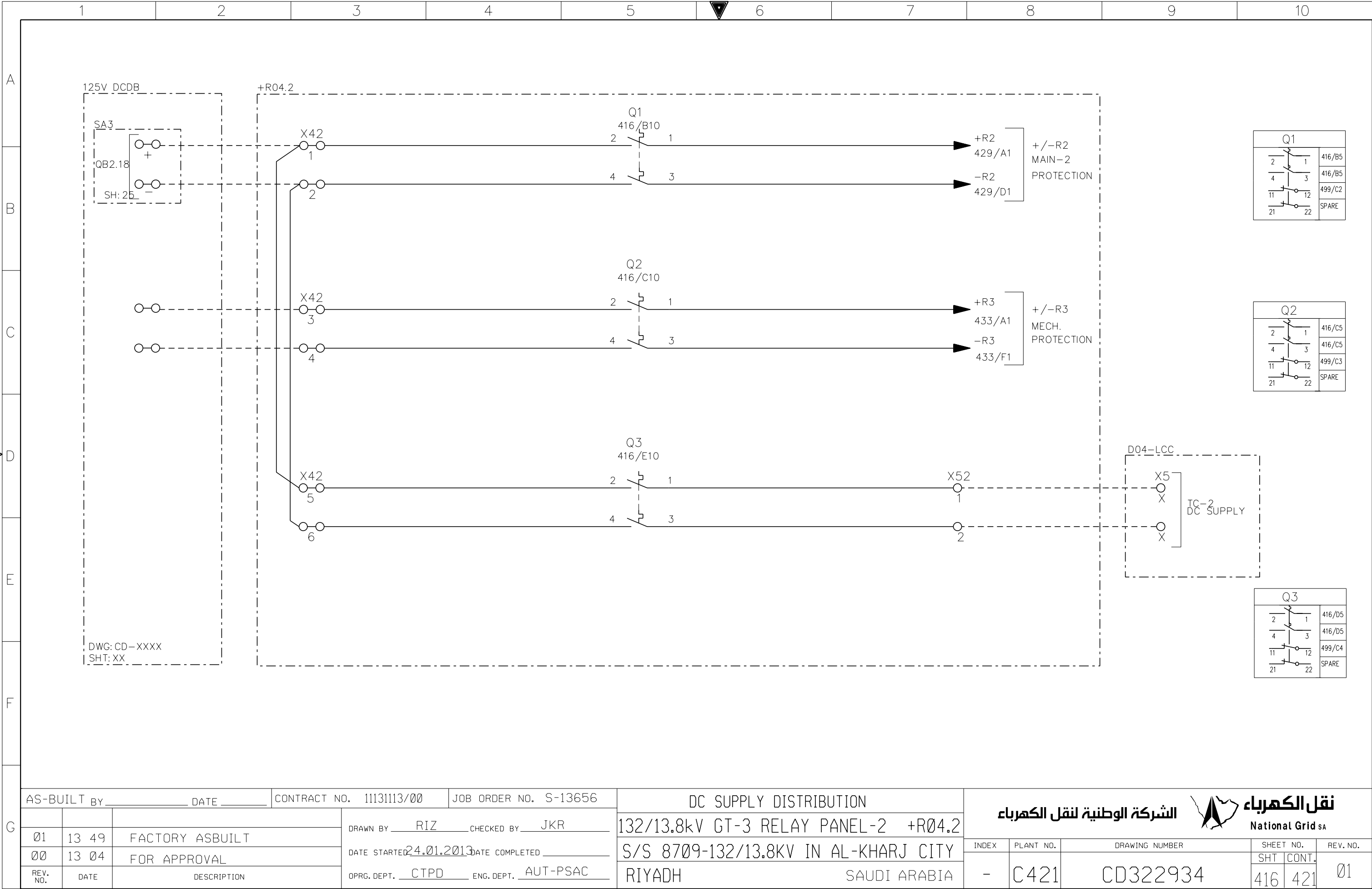




G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC SUPPLY FOR ILLUMINATION & POWER SOCKET		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>							
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY JKR		132/13.8kv GT-3 RELAY PANEL-2 +R04.2		INDEX		PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							SHT CONT.		
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		-		C421	CD322934		411 412		01

DMS

NGD200



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

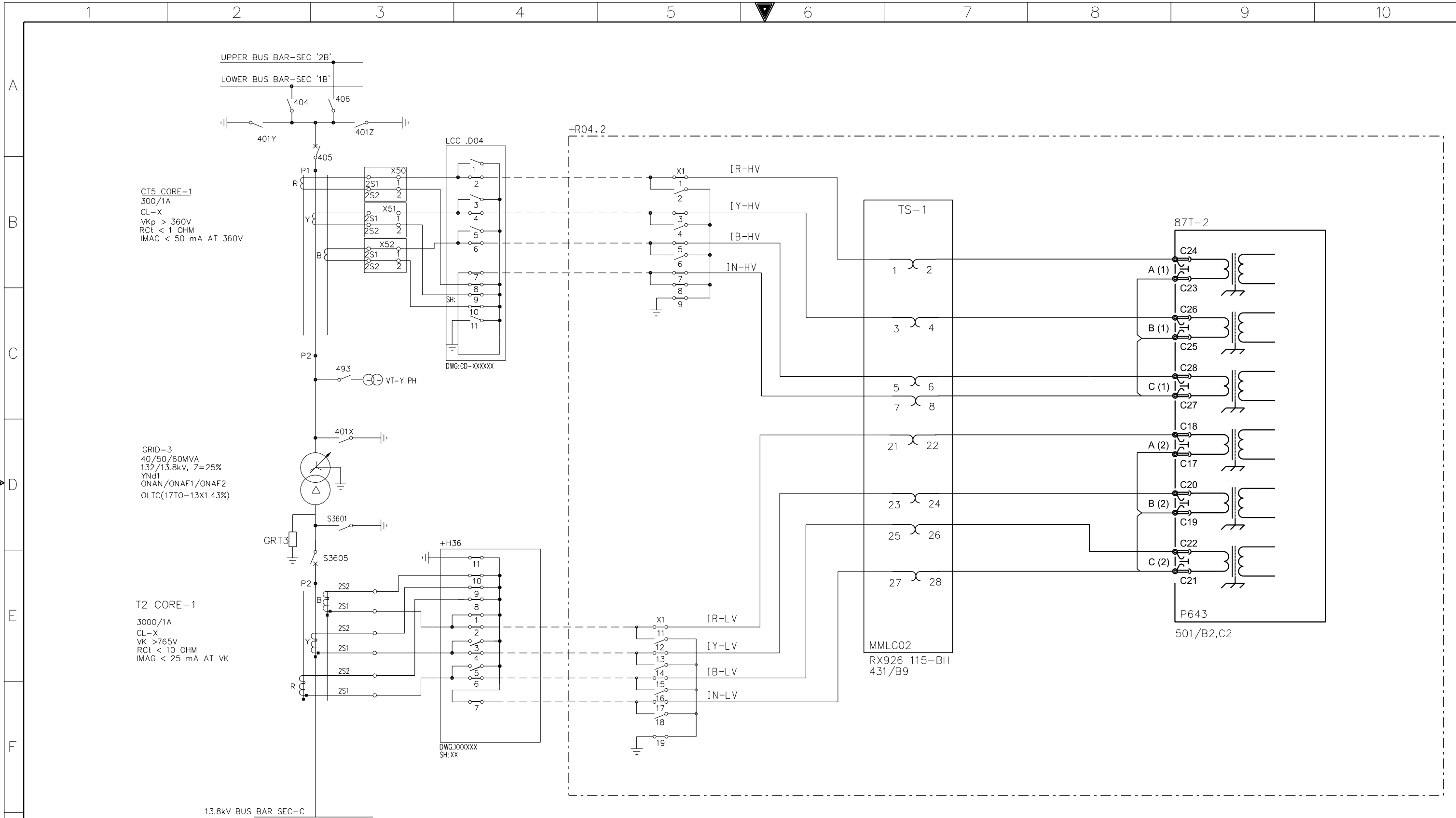
DC SUPPLY DISTRIBUTION

132/13.8kV GT-3 RELAY PANEL-2 +R04.2

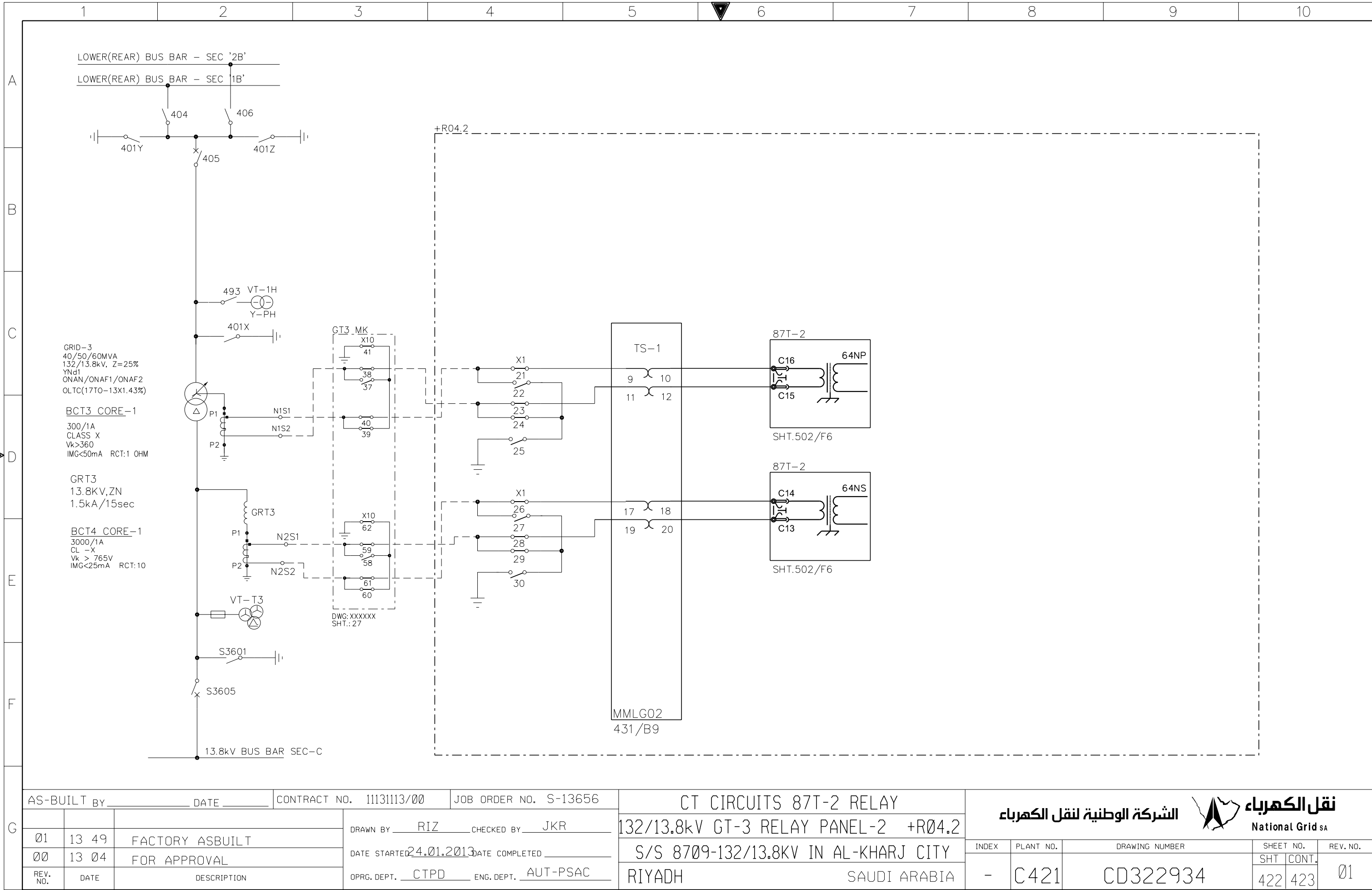
S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

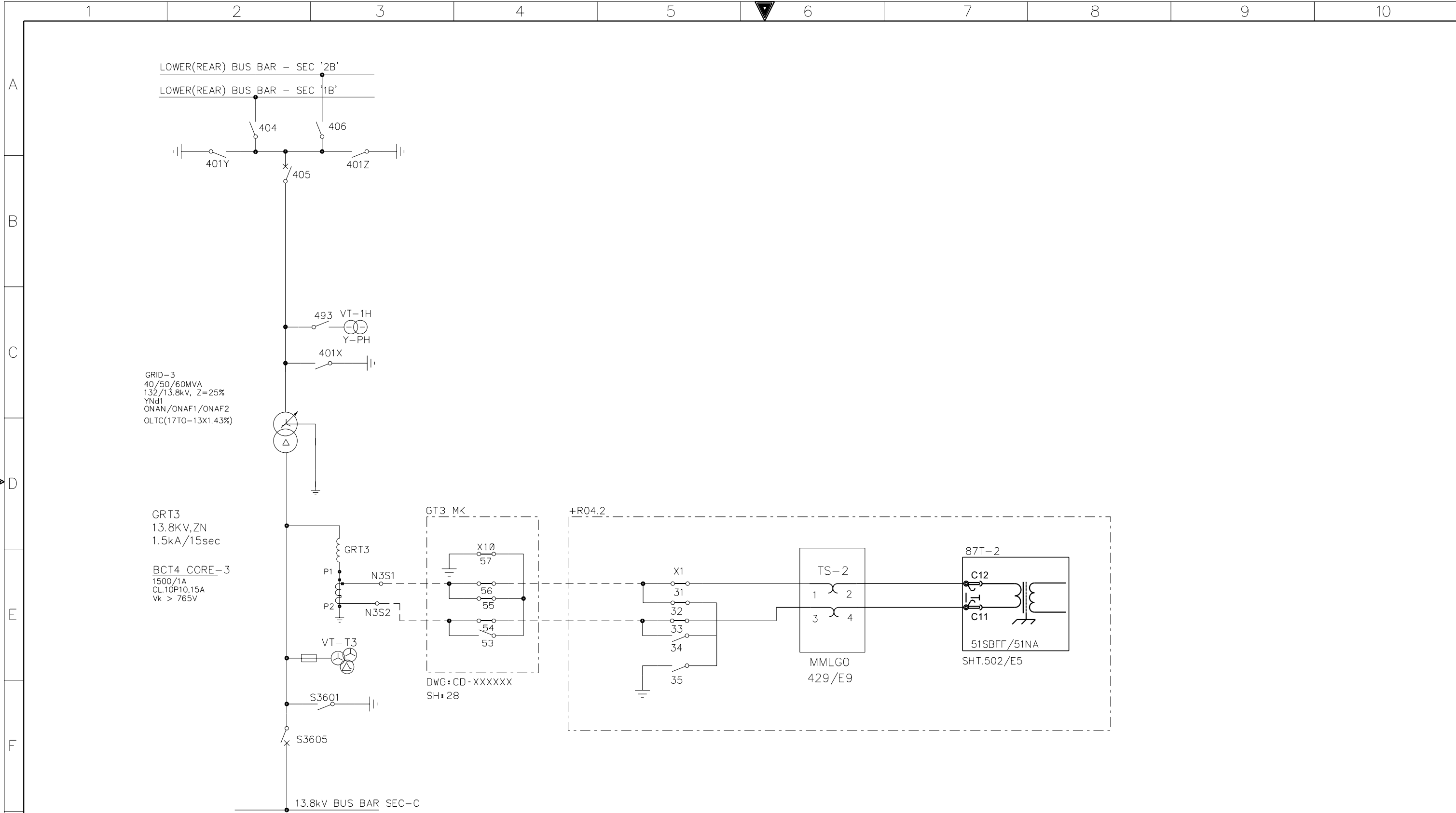
الشركة الوطنية لنقل الكهرباء				
National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD322934	SHT	CONT.
-	C421	CD322934	416	421
				01



G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CT CIRCUITS 87T-2 RELAY		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>						
				DRAWN BY <u>RIZ</u> CHECKED BY <u>JKR</u>		132/13.8kV GT-3 RELAY PANEL-2 +R04.2									
	01	13 49	FACTORY ASBUILT		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
	00	13 04	FOR APPROVAL		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA		-	C421	CD322934		SHT	CONT.	01
	REV. NO.	DATE	DESCRIPTION										421	422	



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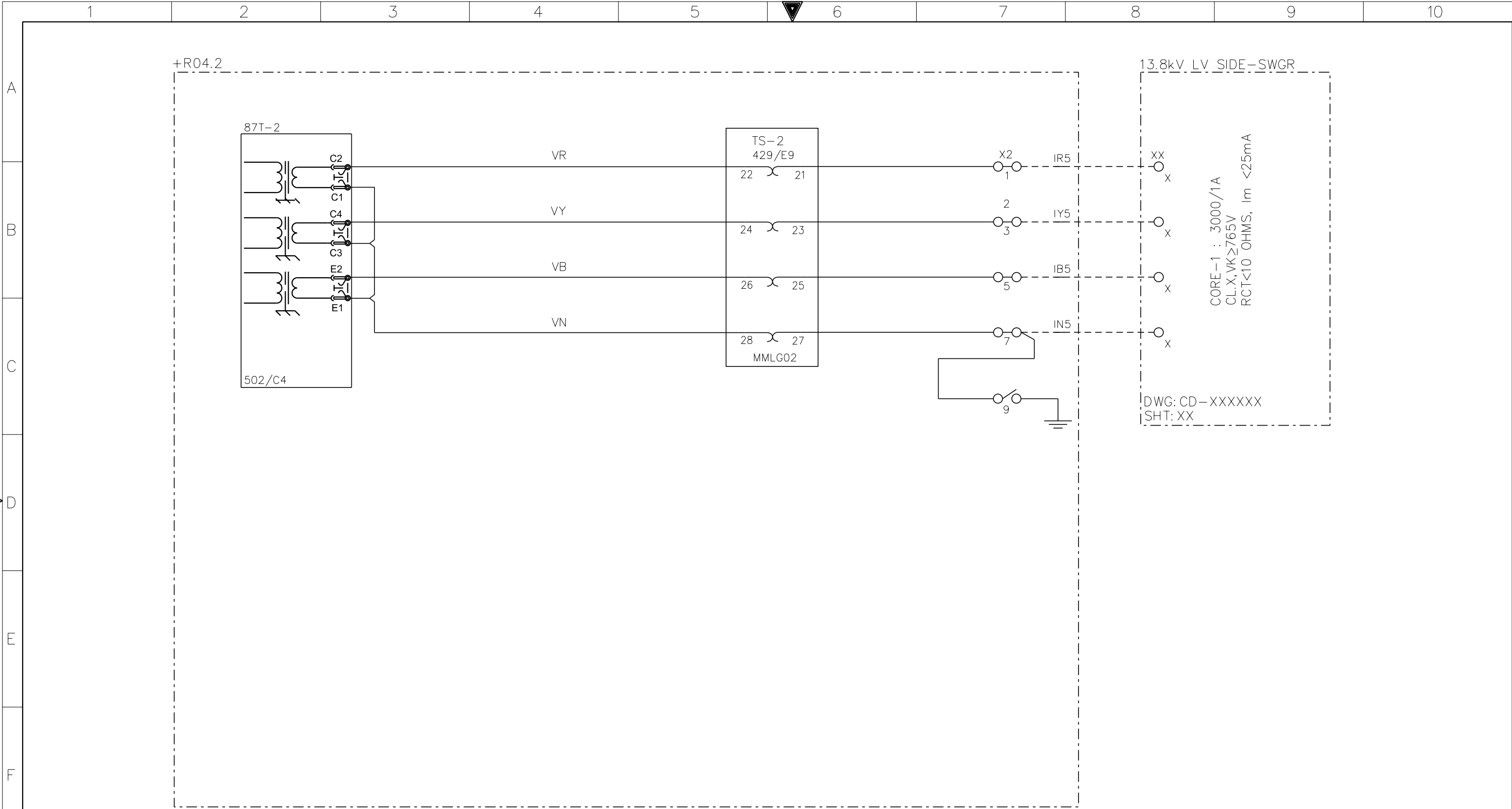


AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

CT CIRCUITS 87T-2 RELAY  
132/13.8kV GT-3 RELAY PANEL-2 +R04.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	
-	C421	CD322934	SHT	CONT.
-	C421	CD322934	423	424
-	C421	CD322934	01	01



AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT
00	13 04	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	RIZ	CHECKED BY	JKR
DATE STARTED	24.01.2013	DATE COMPLETED	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSAC

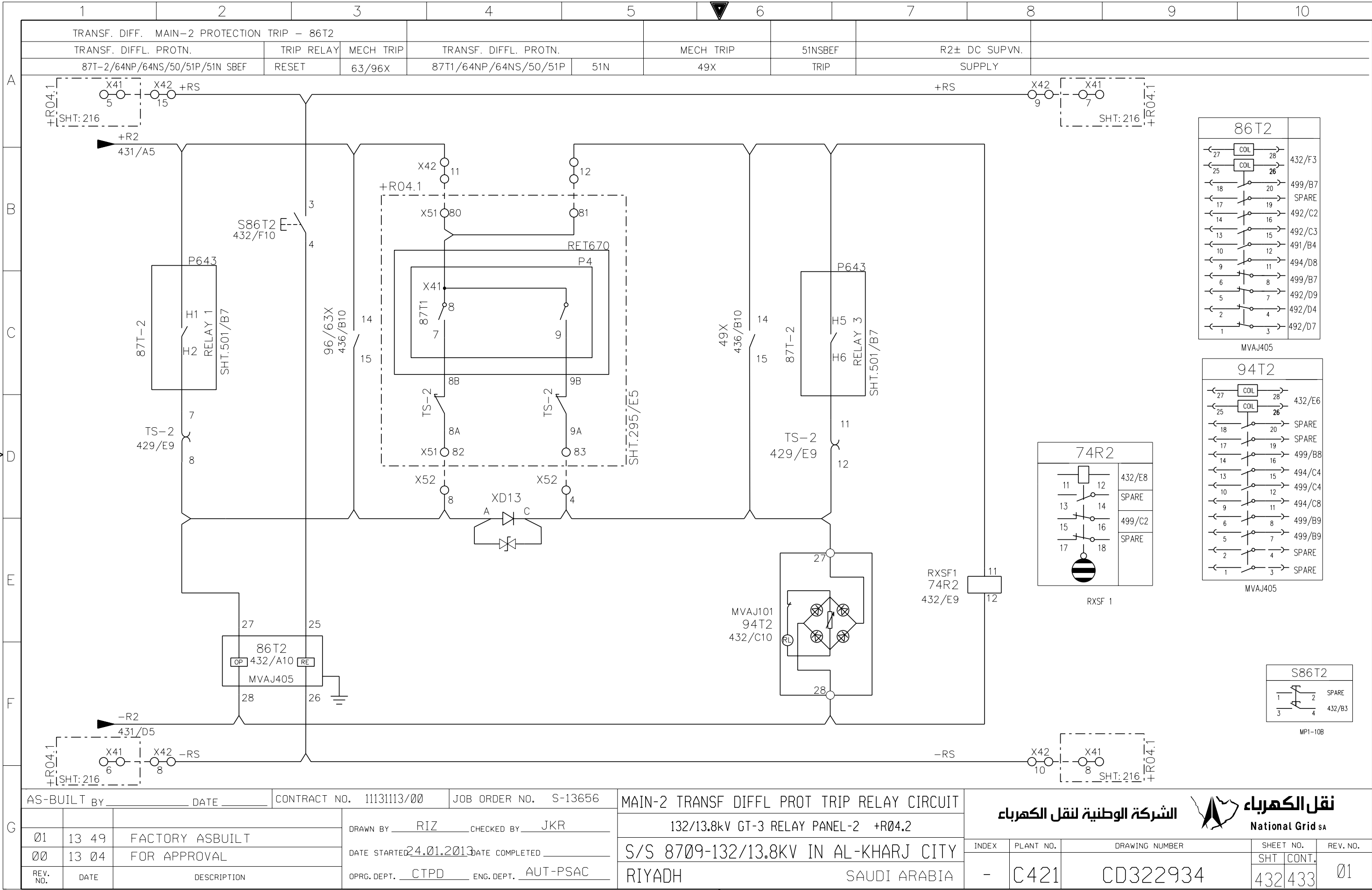
CT & VT CIRCUITS 87T-2 RELAY  
132/13.8kV GT-3 RELAY PANEL-2 +R04.2  
S/S 8709-132/13.8KV IN AL-KHARJ CITY  
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
-	C421	CD322934	SHT	CONT.	01
			424	429	









NG/D2-D (2012/01)

DMS

VECTOR

NGD200

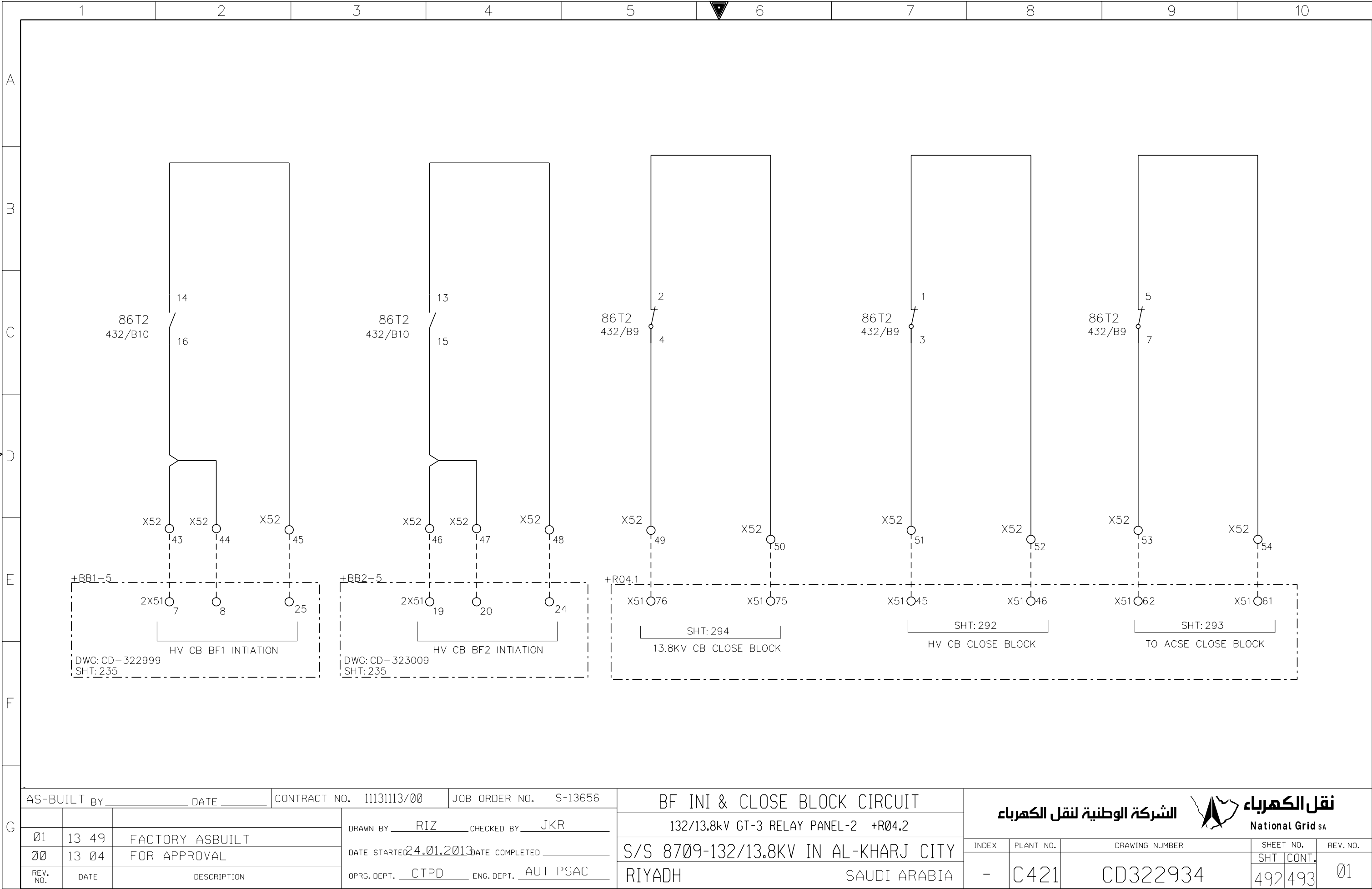












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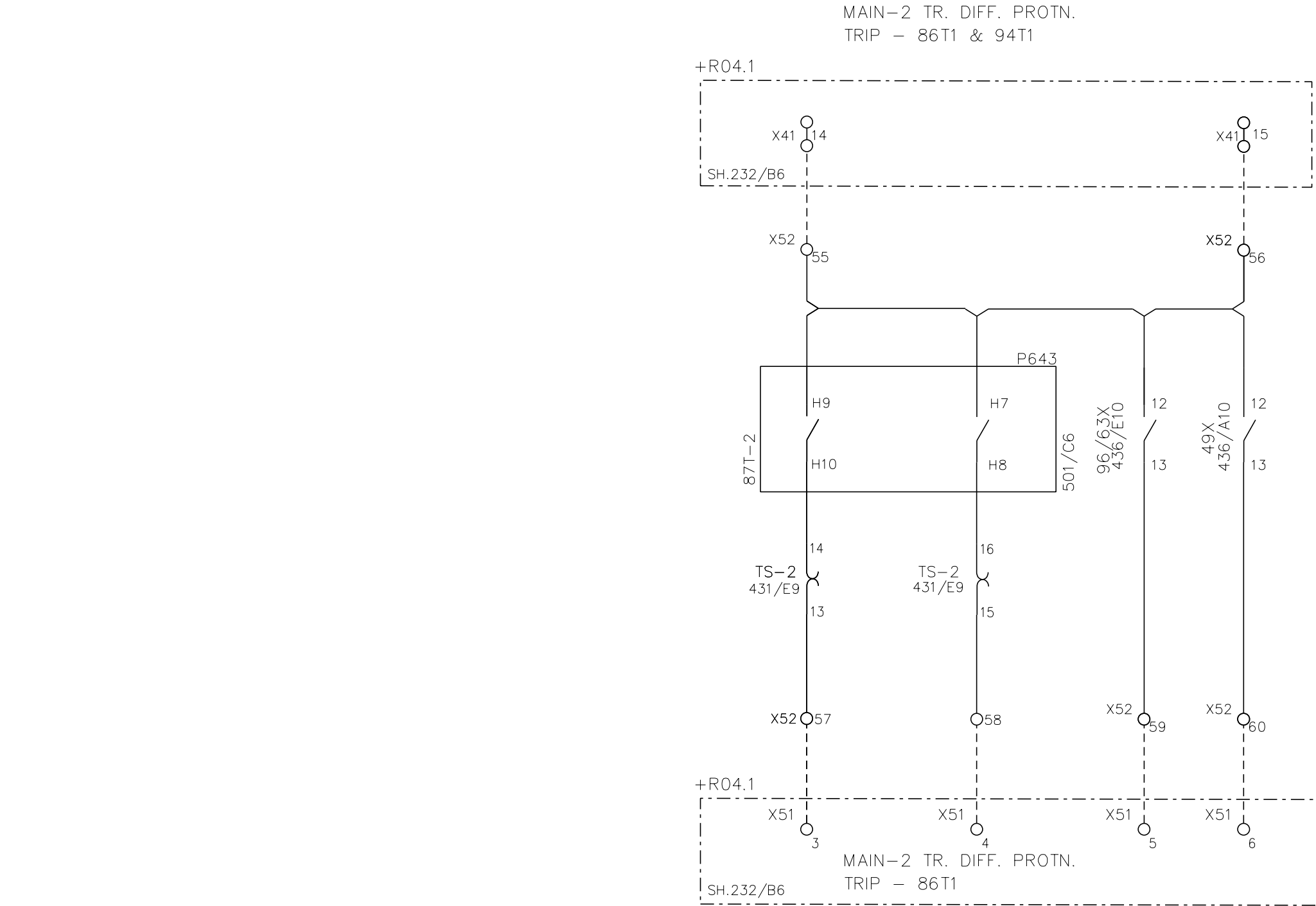
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D


E

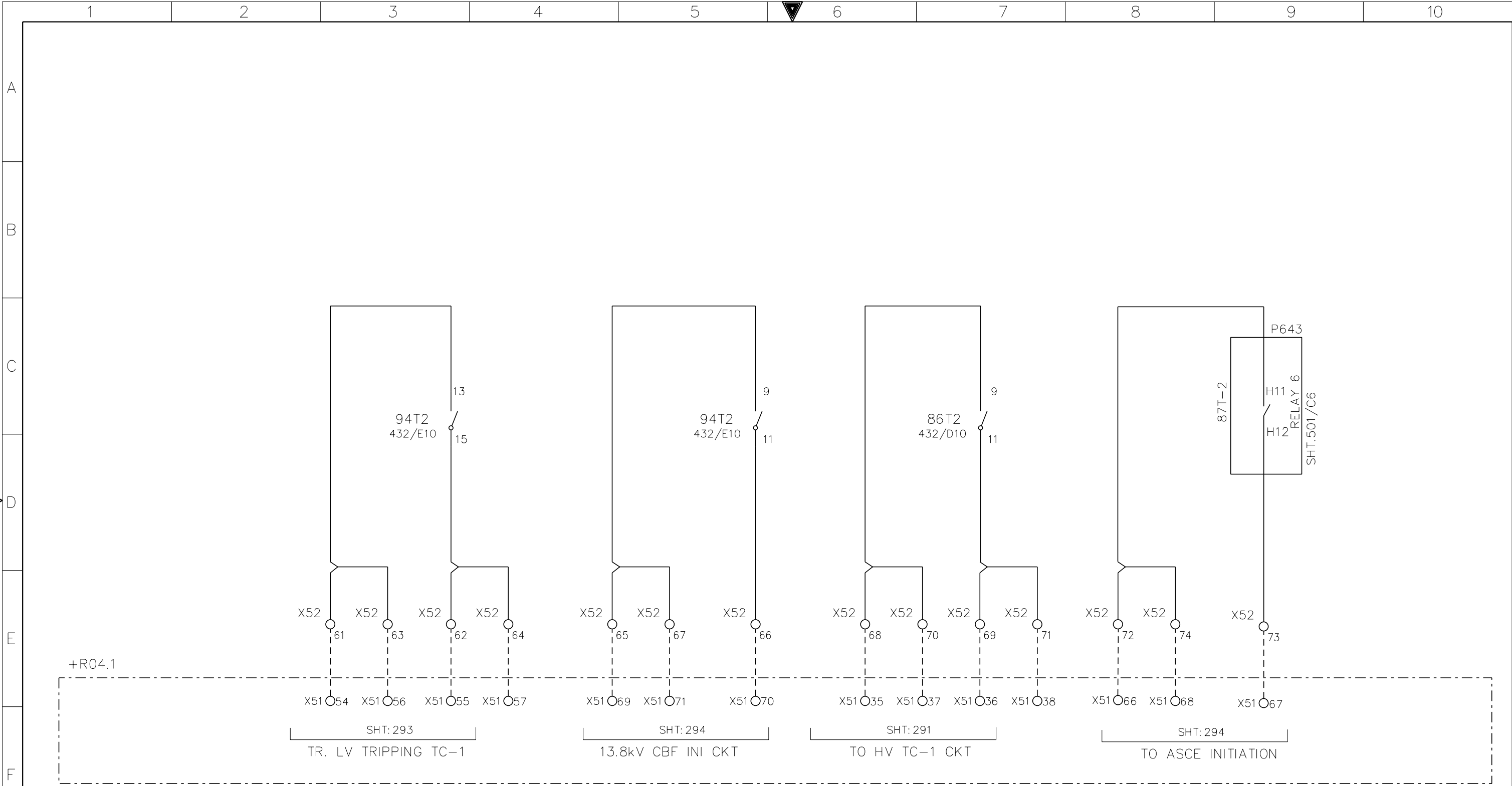
F

G



+R04.2

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TRANSFORMER MECHANICAL PROTN.		<div><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء National Grid SA</div></div>					
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY JKR		132/13.8kV GT-3 RELAY PANEL-2 +R04.2		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013		DATE COMPLETED		S/S 8709-132/13.8KV IN AL-KHARJ CITY					SHT	CONT.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA					-	C421	




G

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY JKR			
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			

CONTACTS FOR TRIP AND CLOSE BLOCK					
132/13.8kV GT-3 RELAY PANEL-2 +R04.2					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					

الشركة الوطنية لنقل الكهرباء

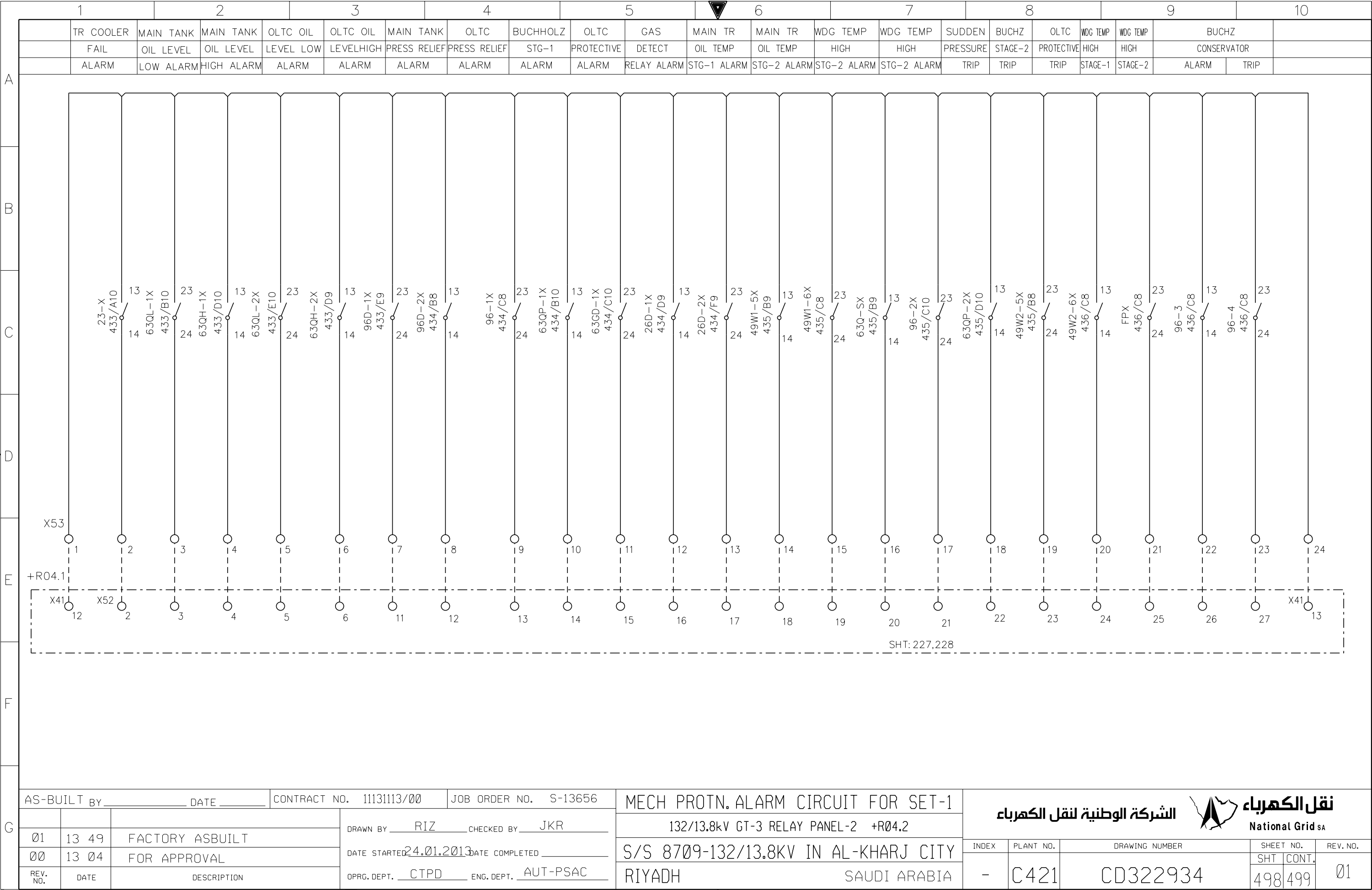


نقل الكهرباء

National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD322934	SHT 494	CONT. 496	01





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		421/E5	15	433/D6	15	494/E5	65	436/B2	14	498/E6	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		421/F5	16	433/D7	16	494/E6	66	432/A1	15	498/E7	16																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		421/F5	17	434/D1	17	494/E5	67	SPARE	16	498/E7	17																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		421/F5	18	434/D2	18	494/E7	68	SPARE	17	498/E8	18																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		421/F5	19	434/D4	19	494/E7	69	SPARE	17	498/E8	19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		SPARE	20	434/D5	20	494/E8	70	437/B4	18	498/E8	20																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		422/D4	21	434/D6	21	494/E9	71	437/B4	19	498/E9	21																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		422/D4	22	434/D7	22	494/E10	72	SPARE	20	498/E9	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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		422/D4	24	435/D2	24	494/E9	74			498/E10	24																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		422/D4	25	435/D4	25	495/B2	75			SPARE	25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		422/E4	26	435/D5	26	495/E2	76			SPARE	26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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		423/D5	35	491/B5	35	SPARE	85			SPARE	35																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		SPARE	36	491/A6	36	SPARE	86			SPARE	36																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		SPARE	37	491/C5	37	SPARE	87			SPARE	37																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
		SPARE	38	491/C6	38	SPARE	88			SPARE	38																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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B	REFERENCE		X62 ALARM CKT		REFERENCE		X92 SPARE			
	414/B3	1	499/C6	1						
C	414/B4	2	499/B6	2						
	498/E1	3	499/C7	3						
	498/E2	4	499/B7	4						
	498/E2	5	499/C8	5						
	498/E3	6	499/B8	6						
	498/E3	7	499/C8	7						
	498/E4	8	499/B8	8						
	498/E4	9	499/C8	9						
	SPARE	10	499/B8	10						
	SPARE	11	499/C9	11						
D	SPARE	12	499/B9	12						
	SPARE	13	SPARE	13						
	SPARE	14	SPARE	14						
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G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCK REFERENCE		الشركة الوطنية لنقل الكهرباء National Grid sa	
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	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD322934 507 NIL 01	